BARRIERS TO PRIVATE INVESTMENT IN ELECTRICITY GENERATION IN BANGLADESH

by

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Abstract

Bangladesh currently faces a crisis of limited electricity generation capacity. Only 30% of Bangladeshis have access to electricity, and those who do face poor quality service such as frequent blackouts and voltage variations. A lack of reliable power impedes economic development of the country.

Since the early 1990s, the Government of Bangladesh has attempted to create market conditions for the sale of electricity. By introducing the incentives of a market, Independent Power Producers have the potential to make up the electricity deficit while inducing state-run utilities to operate more efficiently. However, corruption among political elites dissuades potential investors.

This study examines several barriers to private investment in electricity generation in Bangladesh, such as corruption in the sector, weak regulatory oversight and a poorly defined market for electricity. Through analysis based on elite interviews and case studies, I identify policy options for increasing IPP investment and make recommendations.

Executive Summary

Electricity is a scarce commodity in Bangladesh. In a country of approximately 146 million people, only one third of the population has access. Those connected to the national grid face a barrage of related problems in the quality of service they receive: voltage variations damage household and industrial equipment; frequent blackouts ("load shedding") together with power surges occurred 250 days a year for firms in 2006. The Asian Development Bank (2006) estimates the "current dependable generating capacity of the country is 4,120 MW, while the peak demand is about 4,700 MW" (p.1). Over the past ten years annual average demand for electricity consumption has been growing at 8.1% per year, which will create a generation shortfall of at least 2000 MW by 2010.

A lack of reliable power severely impedes economic development of the country. Many foreign investors shy away from Bangladesh because electricity quality is so poor. Seventy-eight percent of Bangladeshi firms cite electricity service as a major to severe obstacle to expansion. At the same time, the government charges electricity prices below the cost of production and can not afford to replace or repair existing infrastructure. The populace refuses to pay more for shoddy service. Citizens fix illegal hook-ups to existing distribution lines to steal electricity. Bill collectors and utility managers have a long history of manipulating figures to inflate electricity "lost" in the system. The government must subsidize the sector to keep it financially solvent, while much needed heath and education programs are neglected from lack of funds.

Policy Problem

Since the early 1990s, the Government of Bangladesh, together with various multilateral donor agencies, has attempted to create market conditions for the sale of electricity by separating state-owned utilities by function, increasing regulatory oversight of the sector and increasing the number of Independent Power Producers feeding electricity into the national grid. By introducing the incentives of a market, Independent Power Producers (IPPs) have the potential to make up the electricity deficit while inducing state-run utilities to operate more efficiently. However, the high level of corruption among political elites dissuades potential IPP investors from making the necessary investments.

Methodology and Recommendations

In this study, I examine top-down approaches to solving the electricity deficit in Bangladesh. My goal is to analyse policy options that increase generating capacity and reliability in a meaningful way for Bangladeshi entrepreneurs and industrialists. Data from stakeholder interviews and case studies –Thailand, India and Pakistan – are used to develop four alternative policies to address barriers to private investment in electricity generation. I analyze each alternative for its political feasibility, stakeholder acceptance, economic efficiency, ease of implementation and ability to control corrupt behaviour by stakeholders. Based on my analysis, I recommend the following alternatives:

1. Strengthening the Bangladesh Energy Regulatory Board through secured funding and increased staff capacity.
2. Government facilitation of distributed generation between industrialists and neighbourhoods.

Post-Military Coup Analysis

Since the soft military coup of January 2007, a policy window has opened in Bangladesh for reforms of the electricity sector. For the moment, many Bangladeshis believe change is possible. Already the interim government has demoted top officials in the sector known for their corrupt practices and re-opened contract negotiation with potential IPPs. The interim government must continue to make bold reforms in the sector to maintain public support and be effective as possible during its time in power.

The policies recommended in this study have strong mechanisms for tackling corruption. Their potential for successful implementation was dubious under the former government. In order to adopt these policies, the current, interim government needs to quell the fear of extrajudicial violence among reform-minded individuals in the government and populace. It must also build confidence among potential distributed generators that it will honour their property rights. Face-to-face negotiations will demonstrate commitment to contract requirements and help to build the necessary level of trust to engage in business transactions.

To my darling mum, dad, sister and brother,
as well as relatives and friends,
for their kindness, love and support.

Acknowledgements

I would like to thank Nancy Olewiler and John Richards for guiding me through this project from start to finish. I am extremely fortunate to have had such dedicated and knowledgeable advisors. I found very helpful the conversations with Dominique Gross and Doug McArthur on development issues. Kelly Hewitt's explanations and comments are much appreciated. Also, I would like to thank my thesis group for their insights.

This project would not have been possible without the generosity of the members of the Bangladeshi electricity sector who allowed to me to interview them. Due to the hospitable nature of interviewees, many meetings lasted for over an hour and I was able to interview the same person multiple times. Thank you for sharing your time and thoughts with me. It was fascinating to learn about the history of Bangladesh directly from those who have lived it. Although I would like to thank people by name, I have decided to keep all interviewees anonymous due to the sensitive political situation in Bangladesh.

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Glossary

Capacity	(1) The instantaneous power output at any given time, normally measured in kilowatts (kW) or megawatts (MW), of a power plant. (2) The instantaneous electricity demand at any given time, normally measured in kilowatts (kW) or megawatts (MW). (3) A transmission facility's ability to transmit electricity, at any instant.
Combined Cycle Gas Turbine (CCGT)	The combination of combustion and steam turbines to generate electricity from two thermodynamic cycles. Exhaust gases from a combustion turbine flow to a heat recovery steam generator (HRSG) that produces steam to power a steam turbine, resulting in higher thermal efficiency than achievable by operating the combustion or steam turbines individually.
Distributed Generation	Electricity generation that is independent of the power system grid. This generation is usually on a small scale and located close to customers.
Distribution System	Electrical lines, cables, transformers and switches used to distribute electricity over short distances from substations to the customer, generally at voltages lower than 69 kV.
Energy	The amount of electricity produced or used over a period of time, usually measured in kWh, MWh or GWh.
Independent Power Producer	A privately owned electricity generating facility that produces electricity for sale to utilities or other customers.
Load	The amount of electricity required by a customer or group of customers.
Load Shedding	Occurs when power authorities manage excess demand by eliminating power to regions or neighbourhoods on a rotating basis.
Peak Demand	The maximum instantaneous demand on a power system. Normally the maximum hourly demand.
Power	The instantaneous rate at which electrical energy is produced, transmitted or consumed, typically measured in watts (W), kilowatts (kW), or megawatts (MW).

System Loss	The difference between electricity generated and electricity for which customers are billed. Technical system loss refers to the energy that is lost as heat in electrical equipment and along transmission lines, due to resistance as electricity is transferred from one location to another.
Tariff	A statement that explicitly defines the rate and the terms and conditions of sale for electric power and energy between a utility and its customer, including the type of service, delivery point(s), limitations of obligations to serve, minimum charges and any other terms.
Transmission System	Electrical facilities used to transmit electricity over long distances, usually at voltages greater than 69 kV.
Voltage	Electromotive force or potential difference expressed in volts (V).

Source: BC Hydro (2006); Murphy et. al. (2002).

1 Introduction

Electricity is a scarce commodity in Bangladesh. In a country of approximately 146 million people, only one third of the population has access. Those connected to the national grid face a barrage of related problems in the quality of service they receive: voltage variations damage household and industrial equipment; frequent blackouts ("load shedding") together with power surges occurred 250 days a year for firms in 2006 (World Bank, 2006e, p.1). It is estimated the "current dependable generating capacity of the country is 4,120 MW, while the peak demand is about 4,700 MW," (Asian Development Bank, 2006, p.1). Over the past ten years annual average demand for electricity consumption has been growing at 8.1% per year, which will create a generation shortfall of at least 2000 MW by 2010.

A lack of reliable power severely impedes economic development of the country. Many foreign investors shy away from Bangladesh because electricity quality is so poor. Seventy-eight percent of Bangladeshi firms cite electricity service as a major to severe obstacle to expansion (Investment Climate Assessment, 2004). Some industrialists, particularly in the garment sector, operate expensive small-scale back-up generators to achieve reliable electricity supply for their factories. Sector analyses estimate that up to 25% of generation capacity in Bangladesh is "captive", which highlights the failure of the government to meet the demands of the private sector (Interview 20, 2006).

To garner votes, the government subsidizes electricity prices to the point where publicly owned utilities cannot cover their costs of operation. Infrastructure deteriorates without being repaired or replaced. At the same time, the populace refuses to pay more for shoddy service. Citizens fix illegal hook-ups to existing distribution lines to steal electricity. Bill collectors and utility managers have a long history of manipulating figures to inflate electricity "lost" in the system. Funds that the government could redirect towards much-needed health and education initiatives are spent subsidizing electricity prices and keeping utilities financially solvent.

The electricity sector in Bangladesh lacks the financial and physical capital and efficient management skills associated with private business. Since the early 1990s, the Government of Bangladesh, together with various multilateral donor agencies, has attempted to create market

conditions for the sale of electricity by separating state-owned utilities by function, increasing regulatory oversight of the sector and increasing the number of Independent Power Producers feeding electricity into the national grid. By introducing the incentives of a market, Independent Power Producers (IPPs) have the potential to make up the electricity deficit while inducing state-run utilities to operate more efficiently. However, the high level of corruption among political elites dissuades potential IPP investors from making the necessary investments.

In comparison to Pakistan, a country with similar population and IPP regulation, Bangladesh has only one-fourth the privately owned generating capacity. This study asks why there is so little private investment in electricity generation in Bangladesh, and examines several barriers created by corruption in the sector, weak regulatory oversight, and the poorly defined market for electricity. Through analysis based on elite interviews and case studies, I identify policy options for increasing IPP investment and make recommendations.

In this study, I examine top-down approaches to solving the electricity deficit in Bangladesh. My goal is to analyse policy options that increase generating capacity and reliability in a meaningful way for Bangladeshi entrepreneurs and industrialists. Due to the scope of my study, I do not examine important but broader issues in electricity supply and demand[1]. It should be noted that most of my primary data is based on the perceptions of my interviewees. Those whom I interviewed are experienced participants in the Bangladeshi electricity sector, and knowledgeable in their areas; however, human bias must be taken into account.

In the following section, the study gives a brief history of Bangladesh including a background to electricity policy and markets. I then outline the policy problem, describe the methodology used to collect data to analyse the problem, and present the findings from interviews and case studies. I offer four alternative policies to address barriers to private investment in electricity generation and analyze each alternative against a set of criteria. In the final sections, I give recommendations based on my analysis.

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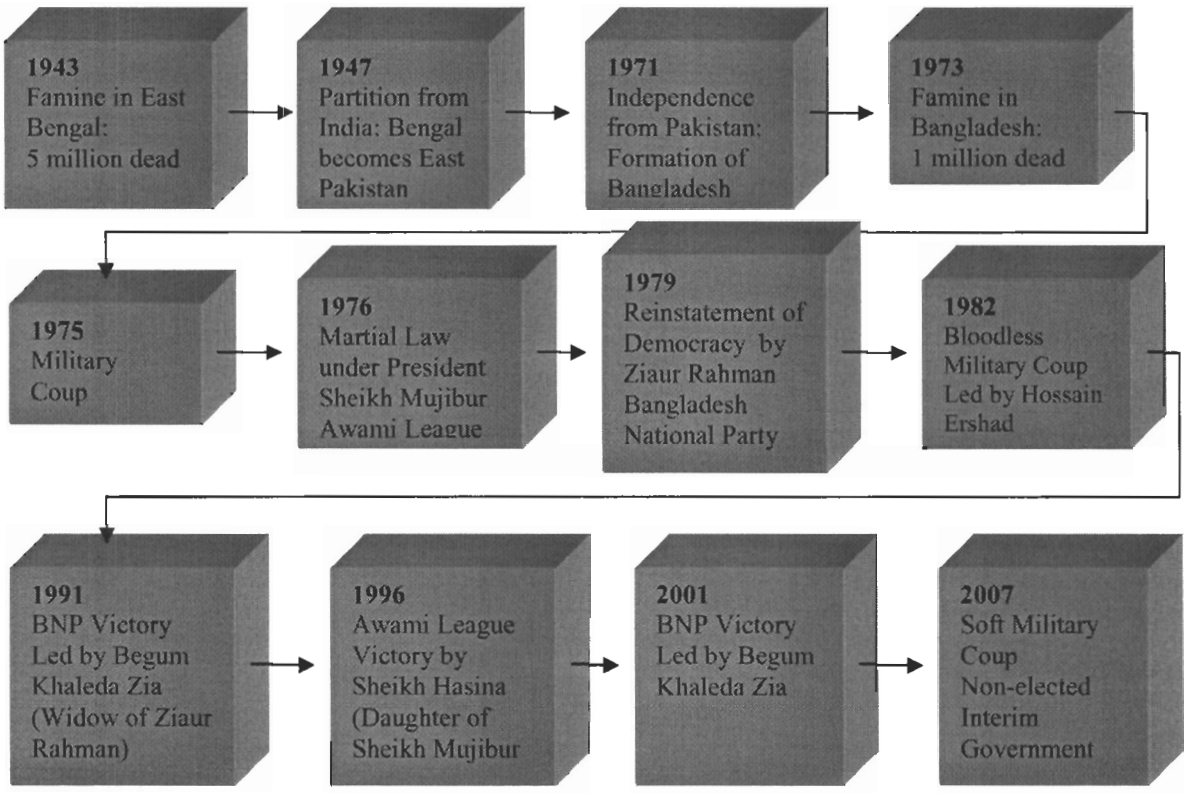
[1] Examples of broader issues include integrating small power plants and captive power into the national grid, educating consumers on energy saving strategies through demand-side management, utilizing battery or compressed air techniques to store electricity for use at peak demand, and using renewable energy as an option for poor, rural households with no access to the national grid. In addition, because Bangladesh has large natural gas reserves, most new power plants built will be Combined Cycle Gas Turbines, which use gas in a highly efficient way and emit fewer pollutants than other generation techniques such as burning coal. I will not be using environmental impacts as a criterion for evaluating policy options. Because of the limited time and resources, I will not examine issues relating to the exploration and development of gas reserves, although ensuring a reliable source of fuel to IPPs is critical to establishing a stable investment climate in Bangladesh.

2 Background

2.1 Brief History of Bangladesh

Intrinsic to analysis of public policy in developing countries should be an understanding of their recent past, the memory of which influences much of today's behaviour and decision-making. The history of Bangladesh in the 20th Century displays incidents of mass violence and, throughout the century, deep poverty. Embarrassment over past humiliations and current government failures, aversion to foreign domination coupled with strong national pride, and fear of anarchy and extra-judicial violence all play a part in the political landscape of Bangladesh today.

Figure 1 Major Events in Bangladesh since 1943



2.1.1 Famine of 1943 to Independence

Once the richest province in the British Empire, Bengal suffered a famine in 1943 in which over 5 million people died from starvation or related disease. The Japanese occupation of neighbouring Burma in 1942 forced the British army to stockpile food and supplies for its soldiers and destroy access routes in case of an enemy invasion. Economists have also theorized that local hoarding and sluggish government response to the famine exacerbated its effects (Sen, 1981).

For many Bengalis, the acute physical and psychological suffering of the famine marked another humiliation at the hands of British colonialists. During their 200-year rule of India from 1757 to 1947, the British set up trade barriers to undermine Bengal's textile industry and promote European cotton production. When the British moved its Indian capital from Calcutta to New Delhi in 1912, Bengal became a financial and cultural backwater of the empire. In the minds of many Bangladeshis, the Famine marks a culmination of colonial mistreatment and provides an impetus for interpreting development aid as a form of neo-colonialism.

In 1947, India split from Pakistan as Britain withdrew from the region, and the latent animosity between Hindus and Muslims erupted in violence. Partition included the division of Bengal into west and east, the former coming under the control of Hindu-dominated India and the latter belonging to Pakistan, with a Muslim majority. After Partition, Bengal's Muslims fled to what had become East Pakistan and Hindus to India to avoid religious persecution on both sides. The uprooting of much of its population left East Pakistan economically weak and politically disordered.

From Partition to 1971, West Pakistan dominated political, economic and cultural life in East Pakistan. In 1952, students at Dhaka University led a protest against the imposition of Urdu –a West Pakistani language barely spoken in East Bengal- as the state language of both East and West Pakistan. The government in West Pakistan relented under mass public pressure and granted equal status in the eastern portion of the country to Bangla.

Tensions between the two sections of the country came to a head in December 1970, when East Pakistan's Awami League led by Sheikh Mujibir Rahman won a majority of seats in the national parliament. West Pakistani military would not allow the Awami League to form a government. Civil war erupted on March 25, 1971, following a speech in Dhaka in which Mujibur Rahman declared East Pakistan's autonomy. The West Pakistani military employed various methods to quell the independence movement. They targeted Hindus, whom they

believed to be anti-Muslim, as Indian sympathizers. Although the total number cannot be verified, Pakistani soldiers raped an estimated 200,000 to 400,000 Bangladeshi women. The Pakistani Army tortured and murdered suspected Bangladeshi freedom fighters and "killed thirty-five thousand Bengali intellectuals, doctors, professors, journalists, and artists" (Novak, 1993, p.16) slowing the country's development in the coming years. Although conclusive records do not exist, casualties are "now believed to be less than a million," (Novak, 1993, p.168).

On December 4, 1971, India joined Bangladesh in its war against Pakistan. On December 16, 1971, the Pakistani Army surrendered and Bangladesh became a sovereign country.

2.1.2 Politics since 1971

Since 1971, the political system has assumed overtones of dynastic rule: interspersed between periods of military rule, its two main political parties are led by Sheikh Hasina, the daughter of Sheikh Mujibir Rahman, assassinated in a military coup in 1975; and Begum Khaleda Zia, widow of General Ziaur Rahman, Prime Minster from 1975 until he too was assassinated, in 1981. Analysts often note that "a peculiar element in Bangladesh's political culture is the cult of personality. Since independence in 1971, successive regimes have revolved around a single strong personality ruling with an iron hand," (Zafarullah, 1998, p.97).

Over the last decade, Bangladesh has ranked as one of the most corrupt countries in the world, in part because of "the increasingly unhealthy competition and lack of trust between the two major political parties [that] sours the political climate" (World Bank, 2006a). The lack of social capital in the political sphere permeates all levels of social interaction and raises the transaction costs of doing business. This lack of trust increases reliance on the family unit and reinforces a system of political and private sector patronage.

The legacy of violence and anarchy from 1971 feeds mistrust and fear amongst citizens today. Although data on violent crime are lacking, the United Nations cites "an emerging 'culture of violence' which is of rising concern" (2005). Transparency International cites Bangladesh's law enforcement system as one of the most corrupt sectors in the country.[2] The stagnating effects of the patronage system compounded by a climate of political and social violence all play into the inefficiency of policy reform and implementation. To address corruption and patronage in the sector, the new military-backed caretaker government approved, in January 2007, long-delayed regulations separating judicial appointment from partisan control.

[2] Transparency International Bangladesh bases its statistics on analysis of newspaper articles, which themselves may be subject to bias.

A system mired in corruption at the elite level has a trickle-down effect to the behaviour of citizens. In many ways, Bangladesh still suffers from "colonial hangover", in which high-level bureaucrats wield their power in an autocratic manner and citizens expect to be both dominated and coddled by their government (Interview 2, 2006). Fed up with the political wrangling of the two major political parties, citizens have largely supported the soft military coup of January 2007. The current military-backed government promises wide-reaching reforms. It remains to be seen whether reforms will be successfully implemented during the interim government's tenure.

2.2 Markets for Electricity

The legacy of violence, political mistrust and frustration with colonial rule all influence the context in which policy reform takes place in Bangladesh. This study focuses on reform of the electricity sector, which has been driven in most developing countries by the World Bank and other donor agencies as "a necessary component of a larger package of aid and reforms to encourage private sector participation in infrastructure sectors," (Brown et. al., 2006, p.12-13). Donor agencies have met with a certain level of resistance from the Bangladeshi electricity sector for many reasons, not the least of which is the perception of further meddling by rich countries. Nevertheless, donor agencies have pressed their agenda under the rationale that "a new regulatory system was needed to give commitments to investors and protection to consumers," (Brown et. al., 2006, p.12-13).

2.2.1 Goal of Electricity Markets

Since the late 1980s, policy-makers worldwide have encouraged the creation of country-level markets for electricity in an attempt to "reduce prices [and] improve security of supply and combat climate change," (Economist, 2007, p.61). They based this shift away from state-owned monopoly of the electricity network on economic principles: increased competition compels suppliers to lower costs and boost productivity by purchasing machinery that is more efficient, fostering favourable conditions to increase worker efficiency, and lowering transaction costs for delivery of electricity to consumers. From the consumer perspective, increased choice of suppliers induces consumers to inform themselves about the operation of the sector. Prices signal to consumers the costs of production, increasing their understanding of the electricity process.

Greater competition also compels producers to ensure security of electricity supply by maintaining and improving generation and transmission equipment. Producers expand their

generation capacity to meet the demands of consumers. The probability of supply interruptions decreases as the market diversifies in terms of choice of producers.

Certain developed countries in the European Union and various states in the USA have put market mechanisms to work to reduce GHG emissions and address climate change. By mandating a percentage of total energy supply from renewable sources that harness the energy of wind, solar and biogas, they create a market for these sources. I will discuss the relevance of renewable electricity markets for Bangladesh in Section 2.2.4.

2.2.2 Necessity for Government Regulation of Electricity Markets

Generally, markets require several factors to ensure competition: enough producers and consumers so that no one participant can influence the price of the commodity; minimal regulation, which can distort market prices and increase transaction costs; clear, accessible information for consumers regarding their choice of producers; freedom of entry and exit for producers and consumers, and assurance of property rights. As a commodity, electricity resists competitive marketing for several reasons. Firstly, electricity is technically complicated to transport from generator to consumer. Secondly, two of the four components of the electricity network, transmission and distribution, display economies of scale and are therefore most efficiently owned and operated by a single utility. Overcoming these impediments to a competitive market requires careful regulation by governments.

The technical intricacies involved in transporting electricity from generator to consumer make it a difficult commodity to market. Electricity cannot be stored; generators must inject it into the transmission or distribution grid as demanded, while allowing for some loss of energy as it moves through the system. In addition, the grid requires a certain amount of electricity at any given time to maintain a consistent voltage.

The sensitivity of electricity infrastructure makes monopoly state-run utilities a logical option. By controlling the entire electricity process, vertically integrated utilities can approximate how much electricity to generate and feed into the grid based on estimated demand. Yet a lack of market competition for state-owned utilities has resulted in "low labor productivity, deteriorating fixed facilities and equipment, poor service quality, chronic revenue shortages and inadequate investment, and serious problems of theft and nonpayment," (Kessides, 2004, p. 2). Policy-makers have had to balance the technical intricacies of transmitting electricity with the need for market competition.

Unlike generation technology, transmission and - to a lesser extent - distribution infrastructures still have economies of scale. Incentive exists for a single company to invest heavily in these infrastructures and exercise monopoly power over prices charged to both electricity generators and consumers for use of transmission grid. As a result, these components of the network still require involved government regulation to ensure a competitive market for producer and consumers. Many developed countries such as the USA, UK and Canada use computer technology to monitor the flow of electricity through the transmission lines and approximate prices based on instantaneous demand and supply. Despite these technical innovations, governments continue to coordinate transactions between suppliers and consumers because the transmission lines must maintain a certain voltage level. (See Box 1 for further discussion of regulatory frameworks that attempt to foster market-like conditions for transmission and distribution of electricity.)

2.2.3 Methods to Structure Markets for Electricity

Since the mid-1980s, governments in developed and developing countries have experimented with various methods to create market conditions for electricity. Research finds that vertically owned utilities must undergo "ownership unbundling – the legal separation of energy suppliers and transporters" (Economist, 2007, p.61). To create competition amongst generators, the private sector must be encouraged to invest in generation facilities. Finally, an independent regulator is necessary to licenses IPPs, negotiate tariffs, adjudicate disagreements between consumers and producers, and set safety standards for the sector.

Governments have the choice of several electricity market structures, delineated in Box 1 below:3

Box 1 Various Electricity Market Models

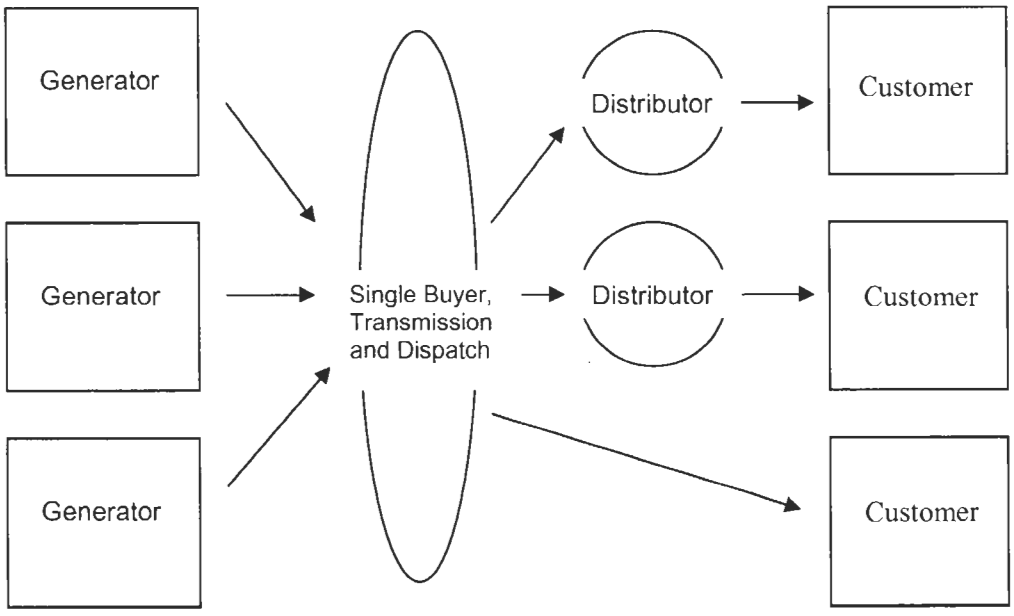
Monopoly—the traditional status quo; a single entity generates all electricity and delivers it over a transmission network to distribution companies or customers.
Single buyer—a single agency buys electricity from competing generators, has a monopoly on transmission, and sells electricity to distributors and large power users without competition from other suppliers.
Wholesale competition—multiple distributors buy electricity from competing generators, use the transmission network to deliver it to their service areas under open access arrangements, and maintain monopolies on sales in their service areas.
Retail competition—customers have access to competing generators, directly or through a retailer of their choice, and transmission and distribution networks operate under open access arrangements.

Source: Kessides, 2004, p.144

Of the four possible market structures, developing countries most often attempt the single buyer and wholesale competition models. State-owned monopolies of electricity networks have economic inefficiencies and retail competition requires advanced technology and human resource capacity to be successful. Most developing countries lack access to the necessary infrastructure and personnel for retail competition.

In order to create market conditions, the single buyer model includes an agency that buys electricity from generators and sells to large power users and distributors. In many cases, the national utility is split into "generation, transmission, and distribution companies, with the transmission and dispatch facilities remaining under public ownership and the newly formed transmission and dispatch entity buying electricity from generators and selling it to distribution companies at regulated tariffs," (Lovei 2000, from Kessides, 2004, p.148). Policy-makers can further disaggregate the single buyer function by unbundling the dispatch and transmission function into separate entities. Bangladesh is in the process of formulating the latter type of single buyer format, with mixed results, as will be discussed in Section 3.3.

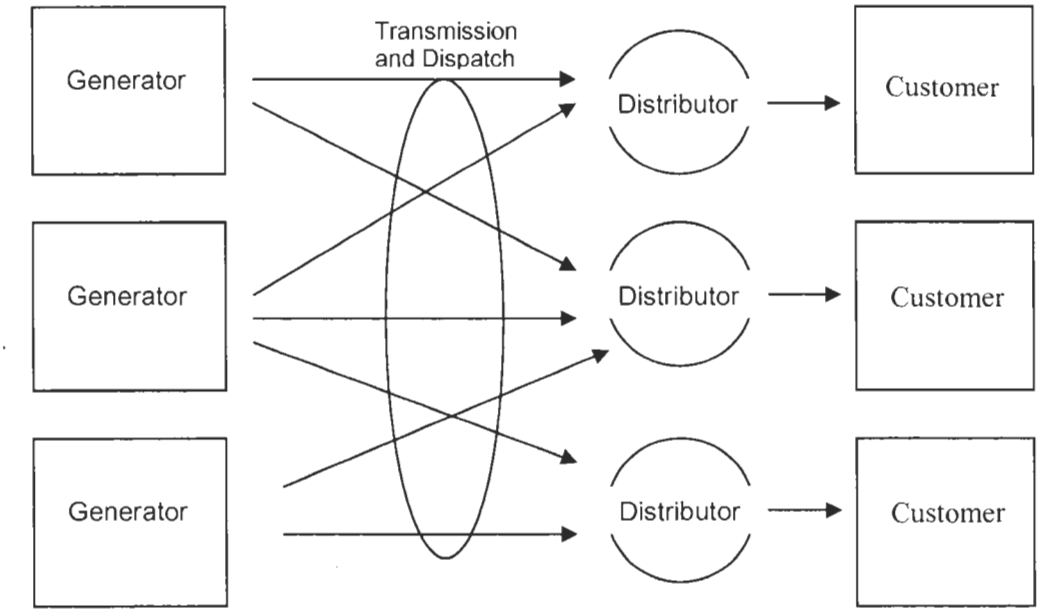
Figure 2 Single Buyer Model



Source: Adapted from Lovei (2000)

Wholesale competition differs from the single buyer model in that local distribution companies retain monopoly over their service districts but buy electricity directly from competing generators. Several prerequisites must exist to ensure successful implementation of wholesale competition. There must be both a spot and forward market based on bids from generators offering their lowest price based cost of production and distributors based on their willingness to pay for electricity. Both types of markets must exist as "forward contracts mitigate the risk of volatile spot prices and encourage suppliers to bid aggressively in the spot market," (Kessides, 2004, p.150). Secondly, the market cannot be dominated by one supplier or consumer; sufficient choice in needed to assure competition. Thirdly, the wholesale market requires a reliable transmission system with enough capacity to allow many generators and consumers to participate in the market. Finally, a non-partisan regulator is needed to "deal with flaws in market design and encourage efficient behavior by market participants," (Kessides, 2004, p.151).

Figure 3 Wholesale Competition Model



Source: Adapted from Lovei (2000)

2.2.4 Issues for Developing Countries

Due to the unique economic characteristics of the electricity network, creation of competitive markets for electricity requires careful regulation. The situation of many developing countries, which lack the funds and human capital of developed countries, adds several complicating factors to the design and implementation of effective electricity markets. Consumers and producers in developing countries lack access to good information. Government departments do not have funds to research and report on the up-to-date situation of electricity production. Many citizens lack access to the internet and other sources of current information. Furthermore, in Bangladesh over half of the population is illiterate (World Bank, 2006g) and the majority of those lacking literacy skills –rural and urban poor- also have limited or no access to electricity, signalling a large deficit of informed electricity consumers.

Bangladesh and many other developing countries suffer from a large degree of corruption and state capture among members of the political and economic elite. Those with power are loath to subject themselves to the scrutiny imposed by market competition, especially in an area that requires high investment and yields potentially large returns, such as electricity generation. Governments in developing countries often tender contracts to electricity generators based on favouritism and bribery. They have also been slow to devolve power to independent regulatory bodies that oversee licensing, tariffs and contracts between the government and generators. The threat of violence exists for those who challenge the status quo. In effect, developing country governments can use their power to slow the transition from monopoly to market organisation and manipulate nascent electricity markets to their own advantage.

Many developing countries lack the experienced, educated personnel necessary to construct, implement and oversee electricity markets. As a relatively new phenomenon, competitive marketing of electricity is subject to much trial and error. Due to lack of funds, poor education systems, and limited information dissemination, most developing countries must rely on the expertise of donor agencies when forming electricity markets. Often government and citizens resist donor agencies assistance, which they interpret as a neo-colonialist attempt at control.

A phenomenon most prevalent in developing countries, non-technical system-loss or power theft, further complicates the intricate coordination of generation and transmission. Due to large-scale poverty, many people steal electricity from the national grid by connecting illegal hook-ups. Non-technical system-loss makes it difficult for regulators to estimate demand and manage the amount of energy flowing through the grid at any given time.

Due to the additional complications in developing countries, addressing climate change through electricity markets would overburden an already fragile system. As discussed in Section 2.2.1, certain developed countries have mandated that a proportion of the country's energy generation be from renewable sources. In the case of Bangladesh, a lack of generation capacity and large degree of state capture within the government limit the transparent operation of electricity markets. Regulation which encourages renewable generation must take a different form than it does in developed countries.

2.2.5 Flaws in Electricity Markets

Two main goals of electricity markets are to ensure cost-reflective prices and increase reliability for consumers. Although advanced electricity markets in developed countries have been shown to increase reliability of supply and reduce prices for large industrial users, price reductions for domestic consumers has yet to occur. Further, since there is a great deal of unmet demand for electricity in Bangladesh, an efficient market will induce potential investors to enter; however, an increased amount of electricity production does not ensure equity of commodity distribution. This aspect of electricity markets is of particular relevance for Bangladesh, where 70% of citizens do not have access to electricity. Further regulation beyond electricity market creation is required to provide access to all citizens, the majority of whom live in poverty.

Policies must address two issues: those living in poverty cannot afford electricity rates that cover the costs of production and many reside in areas of the country where national grid expansion would not be economically efficient. Willingness to pay for equitable electricity service exists among the rural poor, as evidenced by the relative success of the Rural Electrification Board (REB). The REB tariffs "cross-subsidize domestic and agricultural consumers by levying rates on them below the costs of service and levying higher rates above the cost of service on industrial and commercial consumers," (Murphy et. al., 2002, p.30). Although an important aspect of electricity policy, this study focuses on increasing electricity generation capacity in Bangladesh, not issues of equitable access to electricity.

2.3 Electricity Policy and Market in Bangladesh

Creation of electricity markets requires three main components: disaggregating ownership of each component of the network, increasing private ownership of generation facilities, and creating an independent regulator. Since 1991, Bangladesh, with pressure from donor agencies, has tentatively begun this process.

Box 2 Timeline of Electricity Policies in Bangladesh

1910 Electricity Act
This act outlines regulations for the supply of energy, licensing of power producers, infrastructure development, system administration, transmission and sale of electricity, and criminal offences relating to its theft

1972 Bangladesh Power Development Board (BPDB)
After Bangladesh gained independence in 1971, created to act as the monopoly owner and operator of the electricity network

1977 Rural Electrification Board (REB)
Created to oversee electricity distribution and expand access to electricity in the rural areas of the country

1991 Dhaka Electrical Supply Authority (DESA)
Created to oversee distribution of electricity to the capital and surrounding areas

1994 Power Sector Reforms in Bangladesh
Report that described the inefficiencies in the current sector organization and outlined a process of legally separating generation, transmission and distribution entities, increasing private generation, and implementing regulatory oversight of the sector

1996 Dhaka Electrical Supply Company (DESCO)
Created as part of the power sector reforms outlined in 1994 to further develop and operate the distribution system in Dhaka, improve customer service and share administrative burden with DESA

1996 Power Transmission Grid Company (PTGC)
Created as a part of power sector reforms outlined in 1994 to oversee manage and expand the national transmission grid

1996 Power Cell
Policy agency within the Ministry of Power and Energy funded by the World Bank, mandated to shape the direction of the sector

1996 Private Sector Power Generation Policy and Small Power Plant Guideline
- Outlines the need for private investment to boost generation capacity in the country
- Offers fiscal incentives such as tax exemptions to IPPs (greater than 30 MW) and SPPs (less than 30 MW)
- Outlines contract framework, as financing arrangements, fuel supply agreements, allocation of plant location and rate formulation for bulk purchase of power by the government
- Small Power Plant Guideline allows for direct sale of electricity from generator to end-user (SPP Section 4)

2003 Bangladesh Energy Regulatory Commission
Created to monitor the sector, streamline tariff and rate structures and oversee licensing

2006 Captive Power Policy
- Allows private generators to sell excess electricity back to government
- Allows for distributed generation between generators and end-users

2.3.1 Donor Agency Induced Privatization

In the early 1990s, major donors such as the World Bank and Asian Development Bank (ADB) withdrew funding from the electricity sector due to mismanagement of loan funding and inaccurate accounting practices by the Bangladesh Power Development Board (BPDB). In 1994, the *Power Sector Reforms in Bangladesh* report stated that:

> ...BPDB/DESA combined system loss in FY92-93 was 36.3%. Assuming overall technical losses of about 23%, the avoidable system losses (which is theft) of about 13.3% was equivalent to Taka 2901.8 million in FY92-93. In addition, because of poor accounting procedures followed, the data reported by BPDB and DESA are sometimes deficient (p.1).

Large portions of energy would continue to "go missing" due to poorly maintained infrastructure (technical system-loss), unmitigated power theft by individuals through illegal hook-ups (non-technical system-loss) or uncollected electricity bills (Interview 30, 2006). BPDB and Dhaka Electrical Supply Authority (DESA) balance sheets would overstate the amount of electricity generated and sold in order to hide inefficiencies.

As in many other developing countries, electricity pricing in Bangladesh did not reflect operating costs. In 1994, the BPDB's average rate was "61.3% of the long-run marginal cost" of operation and system loss reached 41%," (*Power Sector Reforms in Bangladesh*, 1994, Section 4.1). Both the World Bank and ADB refused to create new loans until the government could attain certain levels of transparency and accountability.

2.3.2 Private Sector Participation

Since sector reform started in the early 1990s policies have encouraged private power generation. Both the 1996 Private Sector Power Generation Policy and Small Power Plant Guideline outline the need for private investment to boost generation capacity in the country. The Private Sector Power Generation Policy recognizes that "the likelihood of securing ... a substantial volume of investment for power generation alone through the public sector is remote. Besides, competing demands on government resources and declining levels of external assistance from multilateral/bilateral donor agencies further constrain the potential for public investment in the power sector," (1996, Section 1.4).

The policy offers Independent Power Producers (IPPs) several fiscal incentives including "total tax exemption [for fifteen years] and 100% foreign currency convertibility and repatriation. [In particular,] the Government of Bangladesh also guarantees the effectiveness of the Land Lease Agreement (LLA), Gas Supply Agreement (GSA), [and] Power Purchase Agreement (PPA)," (Khan, 2007).

Since 1996, seven IPPs have become operational. Together they have a total generation capacity of 1290 MW, which represents about 30% of the Bangladeshi total. As discussed in later

sections, this total generating capacity is low when compared to other developing countries with similar populations, such as Pakistan, with 4 times the IPP generation capacity.

2.3.3 Regulatory Reform

By an Act of Parliament in 2003, the government created the Bangladesh Energy Regulatory Commission (BERC) to monitor the sector, streamline tariff and rate structures and oversee licensing. Of the reforms mandated by donor agencies, regulatory oversight has proven the most difficult to implement. The Government of Bangladesh reportedly stalls funding to BERC and is reluctant to approve administrative prerequisites, such as the organisation and payment structure of employees (Interview 25, 2006).

Despite government's reluctance to enable BERC, the agency continues slow but steady progress towards full functioning. In 2006, licensing of generation facilities began and will soon produce enough income cover the costs of the agency. Although an uphill battle, regulatory oversight is worth pursuing:

> For the electricity sector, a recent study reports that good regulatory governance in the form of an independent regulator funded by license fees and operating under a primary law is associated with 25–35 percent higher per capita generation capacity in the long term. Even simply enacting a regulatory law with a ministry regulator is associated in one econometric study with approximately 15–20 percent higher long term generation capacity." (Brown et.al., 52).[3]

A reliable, non-partisan regulator is necessary to ensure investor confidence, especially in Bangladesh, where social capital is low and government has a merited reputation for corruption and nepotism.

[3] This quotation refers to the following studies: Cubbin and Stern (2005); Gutierrez (2003); and Scott Wallsten, 2002, "Does Sequencing Matter? Regulation and Privatization in Telecommunications Reforms," Working Paper 2817, World Bank, Washington, DC; available at http://wdsbeta.worldbankorg/external/default/WDSContentServer/IW3P/IB/2002/05/03/000094946_02041804272576/additional/134534322_20041117184620.pdf.

3 Obstacles to Investment: Corruption in the Electricity Sector

3.1 Introduction

As discussed in Section 2.3, policy makers have reorganized the electricity sector to create favourable conditions for private investment, yet over a decade later Bangladesh still suffers from a shortage of electricity supply, which will grow to 2000 MW by 2010 even if all planned generation facilities are built and operational. Since 1996, only seven IPPs have become operational, supplying 1260 MW or roughly 25% of the country's capacity. In comparison, Pakistan, which also opened its generation market in 1994, currently has "16 IPPs in the country representing 30% of installed electricity generation capacity," ("Independent Power Producers", 2006). Installed capacity in Pakistan totals 19,478 MW, almost five times that of Bangladesh, to service a population of roughly the same size (150 million).

Given the clear demand for reliable electricity, and the policy framework enabling Independent Power Producers (IPPs), why have so few entrepreneurs invested their money in electricity generation? Much of the reason for IPP underinvestment lies not in the framework set up by recent policy but in its implementation. In effect, IPPs have to play by official rules to appease donors, yet a covert, unreliable, parallel system exists, dominated by political patronage, not rule-of-law. The following section will explore how entrenched corruption undermines the IPP procurement process, creates a weak regulatory regime and slows the development of an efficient market for electricity generation.

3.2 Corruption in the Electricity Sector

Highly centralized political authority affects the operations of daily life for Bangladeshis. In particular, the government has been slow to relinquish control of the electricity sector, which provides an essential service to citizens and requires large investment in infrastructure. Political elites in the executive and bureaucracy exacerbate regulatory loopholes to maintain authority over the sector, despite the policy reforms initiated by donor agencies. As evidenced by the World

Bank Governance Indicators (2006), policy reform has yet to root out the system of entrenched corruption in the electricity sector.

Bangladesh currently weighs in as one of the most corrupt countries in the world. In terms of overall governance, Bangladesh ranks in the eighth percentile worldwide, with only 7 percent of countries surveyed ranking lower. The Indicators aggregate separate data on perceptions of corruption and governance drawn from 31 survey sources such as the World Economic Forum, Economist Intelligence Unit and the World Bank's World Business Environment Survey (Kaufman et al., 2006, p.36). In total, 213 countries worldwide are included in the analysis.

The Indicators attempt to define governance and corruption in as stringent a manner possible by "measuring six dimensions of governance since 1996 until end-2005" (Kaufman et al 2006, p.1). See Box 3 below:

Box 3 World Bank Governance Indicators: Six Dimensions of Governance

1. **Voice and accountability**: the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media
2. **Political stability and absence of violence**: perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political viole33nce and terrorism
3. **Government effectiveness**: the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies
4. **Regulatory quality**: the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
5. **Rule of law**: the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence
6. **Control of corruption**: the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Source: Kaufman et al, 2006, p.4

The Indicators disaggregate the concept of governance into the six dimensions presented in Box 3. Only 8 percent of countries rank below Bangladesh in terms of the "control of corruption" dimension in which "public power is exercised for private gain". General corruption in the public domain results in the high level of state capture in the electricity sector. Bangladeshi political elites have been loathe to give up control of the electricity sector, stymieing attempts at reform by exploiting regulatory loopholes in the IPP and BERC policies and slowing the implementation of a market for electricity (Interviews 4, 8, 10, 20, 23, 24, 25, 26, 28, 29, 30).

3.3 State Capture in the IPP Procurement Process

One of the components of a successful market is freedom of entry and exit by suppliers. Competition for consumers forces inefficient or over-priced suppliers to become more productive or exit the market. In terms of electricity generation in Bangladesh, the IPP policy appoints government entities such as the BPDB and Rural Electrification Board (REB) to act as the sole consumers, awarding contracts to IPPs based on their proposed electricity rate, managerial ability, and access to financing. However, instead of awarding IPP contracts based on merit, the government of Bangladesh operates on a system of bribery and political patronage, which undermines the legitimacy of attempted sector reforms.

In practice, ultimate control over awarding IPP contracts rests at the highest level of government. In decisions regarding "[the government awarding tenders] above taka 25 crore [approximately 3.5 million USD] the final authority is the [politically appointed] Cabinet Committee for Government Purchase and Head of the Government," (ADB/OECD 2004). A typical Power Purchase Agreement between the government and IPP represents well over 3.5 million USD, and therefore, falls under the jurisdiction of the Purchase Committee.

Furthermore, "Tenderers are not permitted to complain to a review panel if the Cabinet Committee on Government Purchase has made a decision for procurement award," (Government of Bangladesh, 2004, p.90). In effect, the Purchase Committee can reject an IPP offer with no threat of recrimination. IPPs must voice any complaints to the procurement agency, not an independent review panel. In the case of IPP tenders, the procurement agency is the Ministry of Power, Energy & Mineral Resources, a representative of which sits on the Purchase Committee.

Centralized, non-transparent decision making at the heart of the IPP process renders investment unattractive to potential power generators. In May 2003, Summit Power Company, a Bangladeshi IPP, bid on a "450 MW Combined Cycle Power Plant [tender] at Sirajganj" (Summit Group 2003), in the Central Western region of the country. In the last stages of approval, the Purchase Committee decided against the agreement without giving any cause for the decision (Interview 26, 2006). It is the perception of stakeholders that rejection of the Summit bid was politically motivated. Although the government re-tendered, no other companies took interest in the offer.

3.4 Political Interference in Regulatory Oversight

Another component of well-functioning markets is security of property rights: both buyer and seller need assurance that the other will honour the contract. An aspect of property rights is the degree of trust, or social capital, between individuals, which Bangladesh lacks. In addition, markets require good regulation that acts quickly to adjudicate unexpected costs and revenues as they occur in life of a contract. Regulation should be comprehensive but not overburden the market by adding unnecessary paperwork to the process.

Although the Bangladesh Energy Regulatory Committee (BERC) oversees operations, licensing and tariff structures in principle, elites within the Ministry and Cabinet have undermined the authority of the regulator. Political interference in the operations of BERC takes two main forms: delays in releasing funds and slowness to approve regulations essential to daily operations. BERC has been operational since April 2004; however, as of June 2005, the government had appointed only three "of the five member commission…[with] the chairman appointed on June 4, 2005" (BERC, 2006). In the autumn of 2006, BERC completed drafting an organogram delineating the "set-up in terms of manpower and departments", a methodology for calculating generation rates, and a draft Electric Generation Tariff Regulation. Final approval for these documents rests in the hands of the Ministry and Cabinet, both of which have been slow to give comments and final consent. The Ministry finally approved the budget for BERC – including daily operating costs such as buying pencils and paper- in the autumn of 2006.

Despite these obstacles, BERC has made progress. As of July 2006, BERC had issued 25 licences and has applications from 40 other small power producers based on approved licensing regulation. The fees from these licences will soon cover the regulator's operating costs, although the Ministry or Cabinet may use their political influence to sequester funds (Interview 32). By keeping BERC in a subservient position, political elites limit BERC's ability to "provide a credible commitment to safeguarding the interests of both investors and customers" (Kessides, 2004, p.17).

3.5 Political Interference in the Electricity Generation Market

3.5.1 Lack of Independence amongst Sector Entities

In principle, sector reform has disaggregated decision-making power over generation, transmission, distribution and retail of electricity so that no one entity has control of the market. Unbundled agencies such as the Bangladesh Power Development Board (BPDB), Dhaka

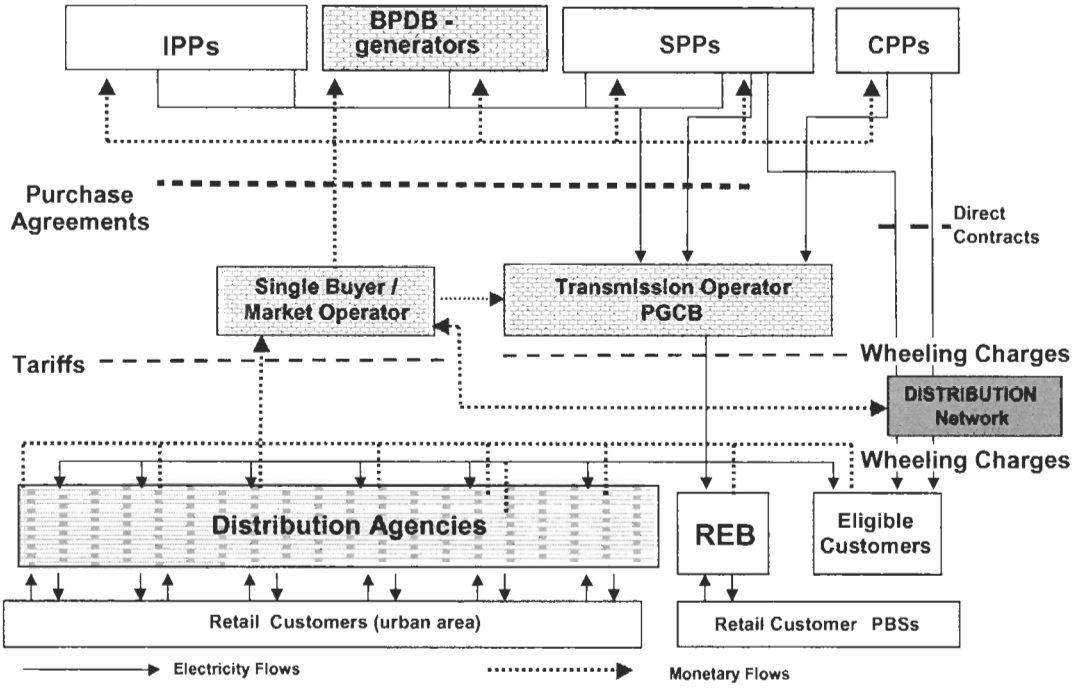
Electrical Supply Authority (DESA), Dhaka Electrical Supply Company (DESCO) and Power Grid Company of Bangladesh (PGCB) have autonomous legal status; however, in practice political elites in the Cabinet and Ministry largely dictate their behaviour (Interview 11, 2006).

Furthermore, both IPPs and government have the opportunity to manipulate policies, which have become increasingly difficult to interpret since the start of sector reform in the early 1990s. Together with donor agencies, the government produced a myriad of policies and documents to direct the behaviour of IPPs and unbundled sector agencies. These policies, such as the IPP Policy, Small Power Plant Policy, Captive Power Policy, Power Sector Master Plan and Power Sector Reform Road Map, overlap and conflate sector organization and direction. The lack of clarity in rights and responsibilities of IPPs discourage many from investors entering the market. Those who do must engage in a high level of market risk and covert behaviour to outmanoeuvre elite interests within the government.

3.5.2 Creating a Single Buyer Market

Although a market for power generation exists in Bangladesh, it is still uncoordinated and susceptible to interference by government making it unattractive for many investors. Currently the BPDB and REB act as the sole buyer of electricity from IPPs. Through these entities, elites in the Cabinet and Ministry exercise monopsony power to approve bids based on political patronage and bribery. To curb the power of political elites and improve sector performance, policymakers decided to work towards a Single buyer market model in June 2006. Figure 4 displays the envisaged structure of the Bangladesh power market.

Figure 4 Proposed Single Buyer Market for Bangladesh



Source: Fichtner &Power Cell, 2006

To achieve a single buyer market, the BPDB will "be converted into a holding company for the entire power sector" and its current generation facilities will become a "new generation company, the Electricity Generation Company of Bangladesh (EGCB)" (Fichtner & Power Cell, 2006, p.1). IPPs will negotiate their contract with the single buyer, which will sell electricity to distribution companies.

Several problems exist with the proposed single buyer model. Firstly, given the entrenched corruption in the sector and its stultifying effects on reform policy implementation, it is uncertain whether the government can realise an effective Single buyer market in the 3-year period allotted by the Power Cell. Secondly, unless the government removes corrupt elites within the sector from their positions and strengthens regulatory oversight, bribery and nepotism will most likely infiltrate the single buyer as has happened with other unbundled sector entities. Single buyer markets are susceptible to state capture. For example "if the single buyer also owns generation, it may select bids from its generation subsidiary or bias competition in favour of it"

(Kessides 2004, 151-2). According to the current Power Cell model, the BPDB will continue to own and operate generation facilities within the proposed Single buyer model (Fichtner & Power Cell 2006, p.1). Giving powerful elites in the Cabinet and Ministry an avenue to expand their influence will undermine any positive effects of the single buyer model.

Thirdly, single buyer markets "concentrate all financial risk in the hands of a single agent. If this state-owned agent is unable to meet its obligations to generators, "the government is expected to step in (an expectation formalized in a guarantee agreement)" (Kessides 2004, p.152). Since both the BPDB and DESA are illiquid and bankrupt due to electricity prices below operating costs[4], the government is already close to bankruptcy (Fitcher & Power Cell 2006). Due to its financial situation, the BPDB currently has trouble honouring payments to IPPs. Taking on further risk will make Bangladesh less attractive to foreign investors, especially in the electricity sector.

3.6 Conclusion

Deep-seated corruption posed a conundrum for policy makers: "A thriving, open, and competitive private sector can be a strong source of demand for better governance," (World Bank, 2006c) but corrupt practices by government hinder entrepreneurial activity. Breaking the culture of state capture in the electricity sector is essential to its long-term viability and the economic growth of the country.

[4] "One problem with capital-intensive electricity utilities is that their operating costs (mainly fuel) are only about half their total costs, so if they under price services they can still cover their operating costs," (Kessides, 2004, 140). Despite continued donor pressure, the Bangladesh Government has kept electricity prices low to assure political support. In addition, price subsidies for natural gas, which is abundant in Bangladesh's East region, conflate prices. Pricing distortions make it unattractive for IPPs to enter market because the government cannot pay its bills based on the price charged to consumers. In effect, the government cannot assure IPPs acceptable return on their investment.

4 Methodology and Data

4.1 Introduction

This section outlines the methodology used to gather information and analyze why there has been limited private investment in electricity generation in Bangladesh. I employ a combination of techniques including semi-structured elite interviews and case studies to collect data on Bangladesh's electricity sector. I use the data to compare the Bangladeshi case to others in the region, namely, Pakistan, India and Thailand.

Case studies are important because Bangladeshi stakeholders use them to gauge the relative performance of Bangladesh's electricity sector. Due to the limited scope of this study, I could not undertake surveys or interviews in countries neighbouring Bangladesh so I relied on the suggestions of policymakers and stakeholders when selecting case studies. Each case study has regional similarities to Bangladesh: they are developing economies, which in comparison to industrialized countries possess a "lack of checks and balances, low credibility, widespread corruption and regulatory capture, limited technical expertise, and weak auditing, accounting, and tax systems" (Kessides, 2004, p.80). Each case study country legislated private electricity generation in the early 1990s and has considerably increased both total electricity capacity and the percentage generated by Independent Power Producers (IPPs) in comparison to Bangladesh. Case studies possess enough similar characteristics to warrant comparison to Bangladesh while displaying considerable expansion in their IPP sector.

4.2 Elite Interviews

I conducted elite interviews in Dhaka, Bangladesh, between May and August 2006. (See Appendix A for a complete list of interviewees.) From an initial introduction into the sector, I used a snowball sample of interviewees from each of the government agencies responsible for generation, transmission, distribution and retail of electricity, together with the policy department for the Ministry for Energy, Power and Mineral Resources. I also obtained interviews with the Chief Executive of an IPP and an industrialist who uses distributed generation for his garment factories. I conducted interviews with officials from donor agencies such as the Asian

Development Bank (ADB) and USAID. Interviews with academics and journalists provided a critical assessment of the electricity sector. Finally, I interviewed a citizen's group interested in building and operating an electricity generation and distribution system for their neighbourhood. Interviews were largely semi-structured and tailored to the occupation and expertise of the interviewee.

Responses from interviewees helped me to identify the policy problem and its manifestation into three main components: political interference in the IPP procurement process, regulatory oversight and electricity market operation. Interviews also aided the formulation of policy alternatives to address the problem of corruption (as discussed in Section 6) and evaluation of alternatives (Table 9). In Appendix A, I include a matrix of interview responses as they relate to the policy problem and formation of alternatives.

I chose to interview senior officials from various organizations to obtain a wide spectrum of data on private investment in electricity generation. "The advantage of interviewing individuals with widely different perspectives is that it ensures that the study will not simply reflect what government officials... want the study to say," (Brown et. al., 2006, 34). Due largely to the hospitable nature of people in Bangladesh, most of the interviews lasted for over one hour. Often I was able to interview the same person two or three times to clarify answers and gain further data.

Elite interviewees provided well-informed data on the complicated and often technical problems with private power generation. Nevertheless, my research is limited in scope because I interviewed only high-ranking officials. A more complete study would include the perspectives of low to middle ranking bureaucrats, IPP employees and electricity consumers.

4.3 Case Studies

I chose case studies because members of the Bangladeshi electricity sector perceive them to be natural comparators. I assess three Asian countries –Pakistan, India and Thailand- all of which are near neighbours of Bangladesh and created policies to encourage private investment in power generation in the early 1990s. Although each of the four countries created policy to allow private power generation in the early 1990s, Bangladesh has made little private generation investment in comparison to the others. Analysis of the factors influencing private investment in each of the case studies identifies whether Bangladeshi policymakers should be modelling policy based on Pakistani, Indian and Thai examples, and if so, to what extent.

Table 1 Comparison of Case Studies

	Bangladesh	Pakistan	India	Thailand
Demographics				
Gross Domestic Income per capita (PPP USD 2004)	1,870	2,225	3,139	8,090
Income Category	Low Income	Low Income	Low Income	Lower-Middle Income
GDP growth (annual)	5%	8%	9%	4%
Population (2005)	146 million	155.7 million	1.094 billion	64.2 million
Population Density (2004, People per square km)	1,069	197	363	125
Current Governance system[8]	Currently Under Military Control (Parliamentary Democracy)	Currently Under Military Control (Federal Republic)	Federal Republic	Currently Under Military Control (Constitutional Monarchy)
Electricity Sector and Independent Power Producers				
Start Date of IPP Process	1994	1992	Early 1990s	1992
Governance System when IPP policy was initiated.	Parliamentary Democracy	Federal Republic (Non-Military President)	Federal Republic	National Assembly of State Security (Military Control)
Electricity Sector Performance				
Total Electricity Capacity	4120 MW	19,478 MW	128,182 MW	25,603 MW
Electricity Capacity per capita	0.028 KW	0.125 KW	0.117 KW	0.399 KW
Capacity Generation by IPPs	1290 MW	4312 MW	15,431 MW	10,241 MW (approx)
Percentage Generation by IPPs	31%[5]	22%	12%	40%
Capacity Shortage	580 MW	411 MW	12,052 MW	None
System Loss (2001-2002 figures)	28%[6] (22% in 2005)	24%	26%	7%

Data Sources: United Nations Human Development Report (2004); World Bank Development Indicators Data (2006g); Asian Development Bank (2006); New York Times Special on Pakistan (2006); Fraser (2005); Indian Ministry of Power (2007); Government of Thailand (2005); Pakistan Private Power and Infrastructure Board (2006); CIA World Factbook (2007); Fitchner & Power Cell (2006); United Nations Economic and Social Commission for Asia and the Pacific (2002)

Although each case study initiated policy to encourage IPPs in the early 1990s, it is important to acknowledge many important differences in governance systems, population and income levels when making a comparison of case study electricity sectors. India and Pakistan have strong cultural similarities to Bangladesh however India is a federal state with almost eight

[5] This figure is misleading. In percentage terms, Bangladesh outweighs Pakistan and India; however, when comparing generation capacity in terms of population, Bangladesh supplies approximately one-eighth of the IPP capacity of Thailand to a population roughly twice the size. Similarly, India has roughly seven times the population of Bangladesh and twelve times the IPP generating capacity.

[6] According to the Fitchner report (2006), a 12% system loss would be acceptable for Bangladesh, since a certain amount of electricity burns off the lines during transmission.

times the population of Bangladesh. Bangladesh and Pakistan share the same state religion, yet Pakistan has operated under a military president for close to a decade whereas Bangladesh has been a democracy from 1991 until the soft military coup of January 2007.

From a broader perspective, political similarities exist between Bangladesh, Thailand and Pakistan. Thailand, with less than half Bangladesh's population, and almost one-tenth its population density, has a similar governance system to Bangladesh based on dynastic rule. All three countries have a fluid and changeable aspect to their political structure. Pakistan is the most politically volatile, with discredited democratic parties, a strong religious influence and a dictatorial military leader. Thailand underwent a military coup in late 2006 sanctioned by the king in reaction to corrupt practices among the political elite. Bangladesh's military coup is similar to Thailand's in its minimal violence and widespread acceptance by the public. The military-backed leadership in Bangladesh also draws parallels to Pakistan, together with fears of long-term curtailing of democratic freedom.

Demographic and political structures of each county affect the level of control of the government over the population and the relationship of public to private sector. The following sections outline key differences and similarities that must be included in a comparison of the IPP process of each country.

4.3.1 Thailand

Table 2 Timeline of IPP Process in Thailand

	Dates						
	1992	1994	1997	1999	2002	2003	2004
Events	Amendment of the Electricity Generating Authority Act to allow IPPs Amendment made during period of military rule	First IPP granted contract: IPP is an affiliate of EGAT, the government authority responsible for generation and transmission	Thailand enters period of economic crisis IPP contracts are honored and further IPP contracts are negotiated resulting in stranded capacity	Govnt. initiates steps to unbundle sector entities Strong opposition by utilities and labor unions	Centralized Ministry of Energy created	National Energy Strategy announced Govnt. proposes enhanced Single Buyer Model	Privatization of EGAT stalled by labor union and civil society groups EGAT privatized June 23, 2005

Thailand has experienced a steady growth of private investment in power generation since its first IPP was granted a contract in 1994 resulting in an IPP capacity roughly eight times that of Bangladesh and more than twice that of Pakistan. Strong labour union and civil society group opposition to utility privatization has not stalled the IPP process as it has privatization of state operated utilities. In comparison to Thailand, Bangladesh has weak political institutions and a high degree of state capture. Thailand's higher level of institutional development and wealth allowed it to honour IPP contracts during a period of financial crisis, building trust between the public and private sector. If policymakers take into account the large discrepancies in institutional development, Bangladesh can look to Thailand for policy options to increase IPP investment.

4.3.2 India

Despite cultural similarities to Bangladesh, the Indian case study includes many differences in its IPP process. It has followed a similar path to Pakistan and Thailand: first allowing privatized power generation and then moving to privatization of state owned utilities. Unlike the other case studies, India has established a system of state-level independent regulatory commissions to license IPPs and set rates. India is transitioning to an open access market for transmission and distribution networks, whereas other case studies countries are attempting to move from full state control of electricity markets to a single buyer model.

Careful analysis of demographic differences is necessary when assessing whether Indian policy options are applicable to Bangladesh. India is a federal state, with a population eight times that of Bangladesh. At the state level, electricity quality varies widely: some states far outstrip Bangladesh in capacity and quality of electricity service, while others are inefficient and ridden with rent-seeking officials. Analysis of each state system is beyond the scope of this study. Instead I focus on national level electricity policies and their implementation.

4.3.3 Pakistan

Table 3 Timeline of IPP process in Pakistan

	Dates						
	1992	1994	1996	1998	1998	1999	2005
	Government adopts Strategic Plan for Power Sector privatization	Private Power Policy enacted	20 IPPs contracted 4500 MW capacity Investment of USD 5.3 billion	Govnt. issues notice to terminate 11 IPPs Govnt. can not pay bills to IPPs Stranded capacity	World Bank called in to renegotiate tariffs and address charges of IPP corruption and Govnt. harassment of IPP owners.	Military Takeover Constitution Suspended Continued negotiation between Govnt., World Bank and IPPs	IPP contracts honored according to Power Purchase Agreements Total IPP capacity of 4312 MW

Unlike Bangladesh, which has experienced comparatively modest IPP investment spread evenly over the past 10 years, Pakistan experienced an initial surge in investment followed by a decade of little growth. IPP capacity increased to 4500 MW from 1994 to 1996, and has decreased to 4312 MW today, with no further investment between 1998 and 2005. Despite World Bank moderation of the crisis in 1998, Pakistan's IPP sector suffers from low investor confidence that government will honour contracts and low public confidence that the government will award future contracts in a transparent manner (Fraser, 2005). Although Pakistan's IPP sector experience has been markedly different to Bangladesh's in terms of capacity expansion, they face similar obstacles in terms of lack of trust between government, private investors and citizens.

4.4 Explanatory Variables

Having acknowledged the weaknesses of case study analysis, I can make qualified comparisons between the potential effects of independent variables on IPP investment. Data from interviews conducted in Bangladesh suggests that stakeholders perceive corruption among elites, a weak regulatory framework and disorganized electricity markets to be key barriers to private investment in electricity generation (See Appendix A). Studies also link levels of corruption and regulatory quality with economic growth, which is associated with reliable access to electricity. Each independent variable is measurable and common to all case studies. Analysis of the effect of

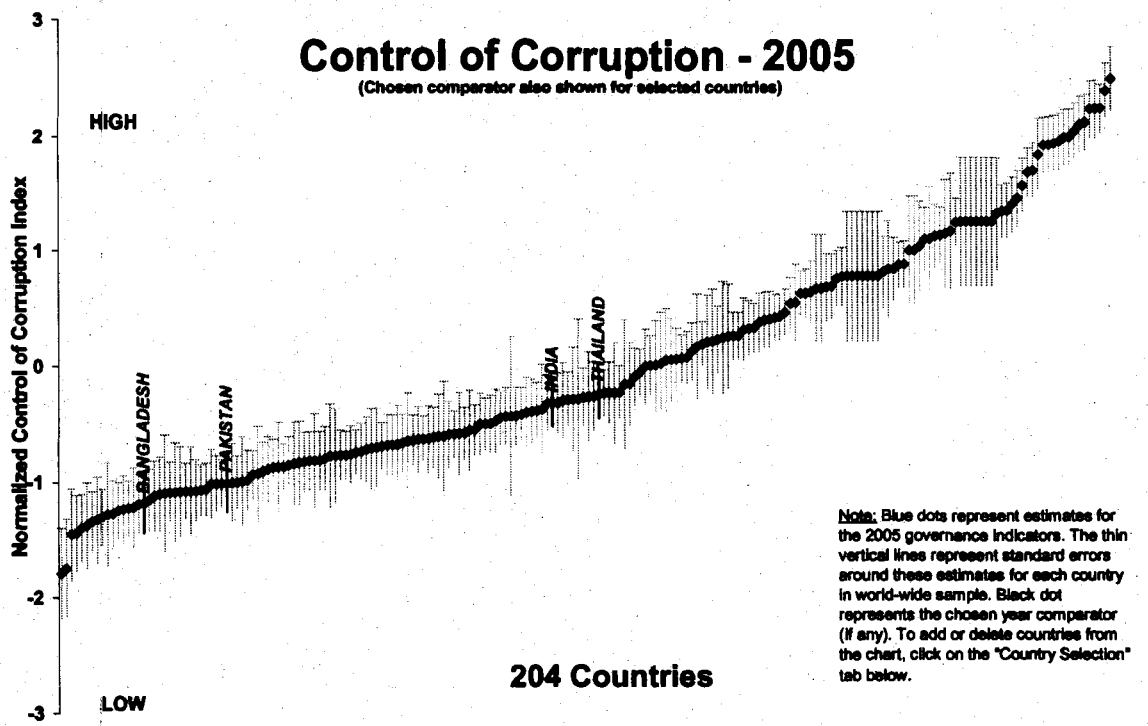
each variable on IPP sector performance increases understanding of policy options in other countries and their potential for success in Bangladesh.

Table 4 Dependent and Explanatory Variables Identified by Bangladeshi Stakeholders

Variable Type	Definition	Measures
Dependent Variable		
Private Investment in Electricity Generation	Percentage of total capacity built, owned and operated by IPPs	• Installed Capacity in Megawatts (MW)
Explanatory Variables		
Control of Corruption	Extent to which public power is exercised for private gain. Levels of state capture	• Existence and independence of executive committees, ministries, legislature, and regulatory bodies. • Transparency and accountability of sector operations • Public and stakeholder participation in policy process • Efficiency of privatized entities and IPP generation • Competitive process of awarding IPP contracts • Level of non-technical system loss
Regulatory Quality	Ability of government to establish and uphold tariff and licensing arrangements with IPPs through an independent regulator	• Independence of regulator • Functions entrusted to regulator • Transparency of regulator's operations • Tariff and Licensing Philosophy • Legal authority to enforce regulation • Level of legal and economic expertise among regulators • Actual performance of the regulator • Effectiveness of other regulation imposed by government • Dependability of regulation for investors and consumers
Electricity Market	Presence of a market for electricity based on competition for least-cost generation based on consumer demand	• Existence of clearly delineated market structure necessary to operate market (either single buyer or wholesale). • Size and regulation of market such that it is efficiently competitive. • Electricity rates reflective of marginal production costs. • Lowered construction and operating costs. • Incentives to close inefficient generation plants (and distribution/retailers depending on level of regulation).

Evaluation of general levels of corruption and regulatory control among case studies points to a possible statistical correlation between IPP capacity and quality of governance. Figure 5 organizes countries by increasing control of corruption and quality of regulation as one moves up the left hand scale. Each dot represents a particular country, with the three case studies and Bangladesh specifically labelled in the diagram.

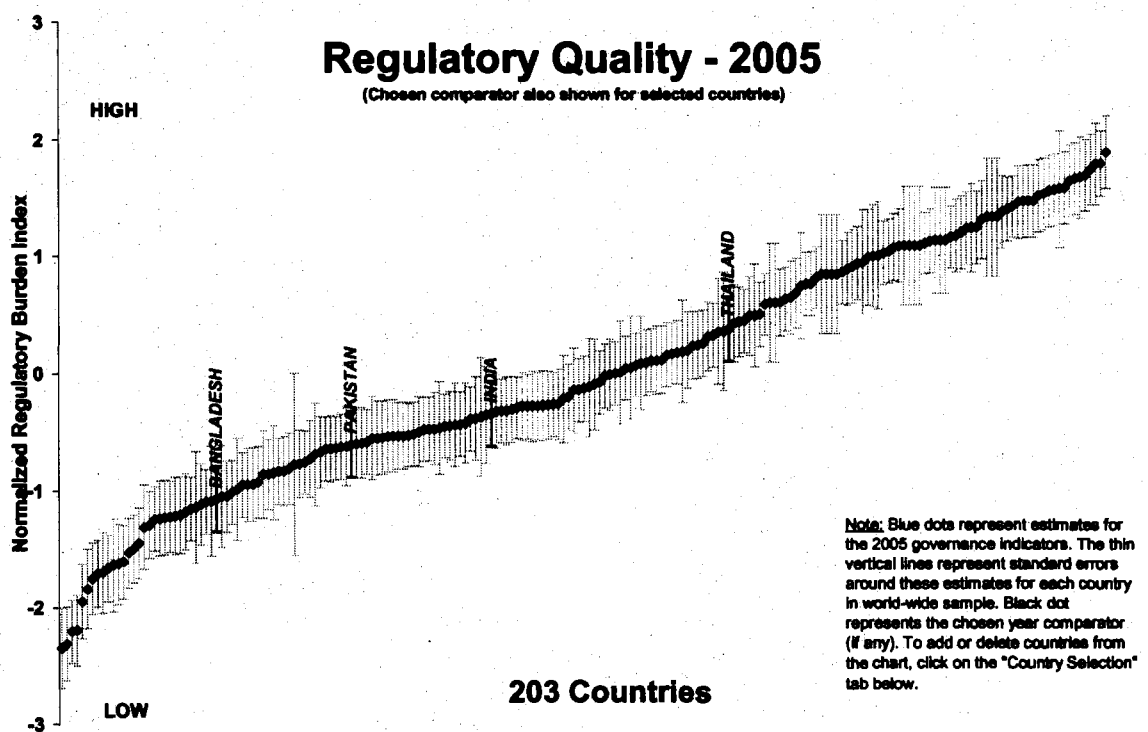
Figure 5 World Bank Governance Indicators: Control of Corruption



Source: "Governance Matters V: Governance Indicators for 1996-2005 " by Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi.
Disclaimer: The governance indicators presented here reflect the statistical compilation of responses on the quality of governance given by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries, as reported by a number of survey institutes, think tanks, non-governmental organizations, and international organizations. The aggregate indicators in no way reflect the official position of the World Bank, its Executive Directors, or the countries they represent. As discussed in detail in the accompanying papers, countries' relative positions on these indicators are subject to margins of error that are clearly indicated. Consequently, precise country rankings should not be inferred from this data.

India and Thailand, with similar levels of overall corruption, both have advanced electricity sectors in comparison to Pakistan, with over twice the population of Thailand and under one-third the IPP generating capacity. Bangladesh, which suffers from the highest degree of institution corruption among case studies, has the lowest IPP generation capacity. It supplies approximately one-eighth of the IPP capacity of Thailand to a population roughly twice the size. Similarly, India has roughly seven times the population of Bangladesh and twelve times the IPP generating capacity.

Figure 6 World Bank Governance Indicators: Regulatory Quality



Source: "Governance Matters V Governance Indicators for 1996-2005 " by Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi.
Disclaimer: The governance indicators presented here reflect the statistical compilation of responses on the quality of governance given by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries, as reported by a number of survey institutes, think tanks, non-governmental organizations, and international organizations. The aggregate indicators in no way reflect the official position of the World Bank, its Executive Directors, or the countries they represent. As discussed in detail in the accompanying papers, countries' relative positions on these indicators are subject to margins of error that are clearly indicated. Consequently, precise country rankings should not be inferred from this data.

Figure 6 shows Thailand's overall regulatory quality to be significantly higher than India's. Thailand scores in the 64th percentile compared to India's 41st percentile ranking among countries included in the World Bank Governance Indicators. This indicator loosely relates to differences in participation of the private sector in power generation: India has seventeen times the population of Thailand but only 1.5 times the IPP generating capacity. Conversely, one would expect the control of corruption indicator to reflect this difference in IPP capacity, yet Thailand ranks in the 51st percentile and India in the 47th, not a sizable difference.

Note that the Governance Indicators look at levels of corruption and regulatory quality at the aggregate level. They do not describe the specific characteristics of the electricity sector in case study countries. While the Indicators describe a country-level trend in corruption and regulatory quality, certain sectors within the country may skew results in a direction not indicative of the whole.

Although statistically rigorous analysis is not possible due to the aggregate nature of the data, the Governance Indicators point to a positive correlation between the overall quality of regulation, control of corruption and electricity sector performance. Together with recommendations by Bangladeshi stakeholders, strong justification exists to explore the effect of explanatory variables on private investment in power generation. In Section 5, I evaluate the success of the IPP program in each case study in terms of the explanatory variables in order to determine relevant policy options for Bangladesh. The analysis recognizes that variables other than those specified in this study may influence the outcomes of IPPs, such as an economic slump or failed macroeconomic policies (Brown et. al., 2006). However, the scope of my study limits me to examining those variables identified as important by Bangladeshi stakeholders.

4.5 Data Sources

Beyond the primary data from elite interviews, I collect data largely from World Bank sources: the Worldwide Governance Indicators, Investment Climate Survey and International Finance Corporation Enterprise Survey data. I also use comparative data from the World Research Institute's Electricity Governance Initiative, which has established a toolkit for analyzing the national policy processes, regulatory governance and environmental and social aspects of power sector reform (WRI 2006).

5 Case Studies

In Section 4, I introduced the methodology and identified India, Pakistan and Thailand as appropriate comparators to Bangladesh. Each case study created policy in the early 1990s to allow private electricity production; however, India, Pakistan and Thailand have translated their policies into substantial increases in IPP generation capacity in comparison to Bangladesh. The explanatory variables identified by Bangladeshi stakeholders provide a framework for analyzing the performance of electricity sectors in case study countries. In this section, I examine how case study countries have addressed issues of electricity sector corruption, regulatory quality and market creation. Policies in case study countries and their applicability to Bangladesh are discussed in Section 5.4.

Table 5 Comparison of Independent Variables Affecting IPP Investment

	Bangladesh	Pakistan	India	Thailand
Overall Control of Corruption[7]	Low (7th percentile)	Low (16th percentile)	Moderate (47th percentile)	Moderate (51st percentile)
Overall Regulatory Quality	Low (15th percentile)	Moderate (30th percentile)	Moderate (41st percentile)	Moderate to High (64th percentile)
Electricity Market	Transition from state monopoly to single buyer	Transition from state monopoly to single buyer	Transition from state monopoly to wholesale market with open access of transmission and distribution systems	Transition from state monopoly to single buyer

Source: Interviews (2006), World Bank Governance Indicators (2006), World Research Institute Electricity Governance Initiative (2006)

[7] Note that the Governance Indicators look at levels of corruption and regulatory quality at the aggregate level. They do not describe the specific characteristics of the electricity sector in case study countries. While the Indicators describe a country-level trend in corruption and regulatory quality, certain sectors within the country may skew results in a direction not indicative of the whole.

5.1 Thailand

5.1.1 Control of Corruption

Of the 204 countries included in the World Bank Governance Indicators, Thailand ranks in the 51st percentile. Although Thailand has less corruption overall than other countries examined in this project, a large potential for state capture exists in the electricity sector. In the privatization process of the largest state-owed utility, the Electricity Generation Authority of Thailand (EGAT), "one of the mechanisms that led to bypassing (or neglecting) public participation processes and legislative processes is the State Enterprise Corporatization Act E 2542 which gives full authority to the executive body in EGAT privatization without parliamentary consideration" (Sukkumnoed et. al., 2005, 14). The operation and budget of the federal department in charge of electricity policy design, the Energy Planning and Policy Office (EPPO), is dependent on the Ministry of Energy. The Ministry is not bound to consult the EPPO for advice nor is it legally compelled to incorporate the recommendations of the EPPO into the final policies implemented.

Impartiality in the sector planning process is further undermined as "key personnel in the Ministry [are permitted] to engage in electricity business. Several officials from the Ministry of Energy were designated as committee members in various companies relating with the electricity sector" (Sukkumnoed et. al., 2005, 12). The opportunity for misuse of power is high, especially since little regulation exists to compel high-level personnel in the Ministry to be transparent or accountable to the public. For example, the 1992 policy to allow IPP operation happened during a time of military rule, when the EGAT labour union activity was highly restricted.

The Thai example raises the question of whether authoritarian political control impedes or augments the efficiency of the electricity sector and, more generally, a country's economic growth. Studies argue that "poor countries get out of poverty through good policy, often pursued by dictators," (Glaeser et. al., 2004, p.1). An alternate group of economists such as Hall and Jones (1999) and Cavalcanti and Novo (2005) link growth with the extent to which political institutions are constrained and democratic.

Due to the limited scope of my study, I have not undertaken an econometric study analysing the impact of electricity sector governance on sector outcomes; however, observations from case studies are important nonetheless. Thailand has the largest comparative IPP capacity despite highly centralized control of the sector. As discussed in Section 5.3, rent-seeking behaviour by the previous, corrupt democratic government undermined investor confidence in

Pakistan's electricity sector. In Bangladesh, the formation of the Rural Electrification Board, a significant reform to the monopoly power of the Bangladesh Power and Development Board (BPDB), took place during the military reign of Zia Rahman in the 1970s. Autocratic or military regimes are not essential for IPP investment, but they do not necessarily decrease investor confidence. The new military-backed caretaker government in Bangladesh has the potential to launch reforms in the electricity sector.

Despite the 1992 IPP policy decision, trade unions normally have a presence in the sector that acts as a check on centralized government authority: pressure from the EGAT labour union has effectively delayed privatization of the utility until 2005. Yet researchers find that "in practice, civil society groups are not constantly engaged in electricity issues, and public attention still depends mostly on the political situation" (Sukkumnoed et. al., 2005, 12). Many of the activities of the private and public entities in the electricity sector happen behind closed doors and there is little sustained or focused public pressure to reform the status quo.

Increasing trade union influence is not an appropriate option for Bangladesh, as electricity trade unions are renowned for their rent-seeking practices, such as over-manning facilities and condoning embezzlement and bribery by meter readers (Interview 10, 2006). Policies to increase sector accountability must engage civil society organisations and the broader public. Analysis of policies to reform trade union practices in Bangladesh is beyond the scope of this study.

5.1.2 Regulatory Quality

Box 4 Definition of Infrastructure Regulation

> ...a regulatory system should be defined as the combination of institutions, laws, and processes that, taken together, enable a government to exercise formal and informal control over the operating and investment decisions of enterprises that supply infrastructure services. Any evaluation of regulatory effectiveness must examine the entire regulatory system—not just the characteristics and actions of the formally designated regulatory entity.

Source: Brown et. al., 2006, p.5

Like the policy unit in the Thai Ministry of Energy, a regulatory body exists but holds little weight in the development of the electricity sector. Many key tasks have been excluded from the mandate of the Interim Electricity Regulatory Commission including "setting tariffs...; issuance of licensing; approval of power purchase; approval of conditions for linkage services; control of electricity system and power purchasing" (Sukkumnoed et. al., 2005, 22). The new

regulatory commission does not have authority to create or enforce regulation. All such regulation functions fall to the Ministry.

The regulatory system lacks accountability, transparency and independence, but it has been sufficiently reliable to encourage IPPs to invest and continue to operate. In effect:

> ...the basic motivation for creating new infrastructure regulatory systems was to establish institutions that would encourage and support stable and sustainable long-term economic and legal commitments by both governments and investors. It was hoped that by promoting credible commitments on both sides, investors would then have adequate incentives to commit their capital to new investments to benefit existing and new customers. (Brown et. al., 2006, xi)

A major impulse behind the push for effective regulation is to increase trust between entrepreneurs and government. When the Thai government honoured IPP contracts during the economic crisis of 1997, investor confidence improved, which ensured continued growth of the IPP sector. In this respect, Thailand has created a fairly well functioning system of regulation even though it operates almost entirely behind closed doors.

5.1.3 Electricity Market

Although the centralized governance of the Thai electricity sector has created a reliable regulatory framework for IPPs, it undermines many of the principles and benefits of market competition for generation. Policy-makers based their decision to adopt an enhanced single buyer model on a 2003 report by the Boston Consulting Group that was never disclosed to the public or announced on the websites of the Ministry of Energy or EGAT. Furthermore, the government has designated 50% of new power plant construction over the next ten years to EGAT subsidiaries, restricting the potential expansion of IPPs. As the single buyer of electricity and a generator itself, EGAT possesses a great deal of market power.

Critics also note that the price of electricity is determined through a fixed rate ceiling based on regional demand. Rate ceilings cause inefficiencies because generators with higher costs have no incentive to enter the market and those will lower costs have no incentive to charge rates based on levelized costs (Interview 7, 2006). Neither IPPs nor EGAT generators have the incentive to reduce marginal costs below the amount "computed on the basis of a simple calculation of the individual customer's rate and the level of consumption in all areas of the country," (Sukkumnoed et. al., 2005, 27). The centralized power of Thai government undermines potential benefits from market competition.

Researchers suggest greater dissemination of accurate information to the public as key to reforming the Thai electricity sector. Since active labour unions and civil society groups exist in the country, a higher level of public education on electricity sector changes would potentially act as a check on centralized government control. Typically, "news and information regarding electricity system restructuring are conveyed to the public through an advertisement campaign... the ads allow the government to gain public support without providing comprehensive information or alternatives" (Sukkumnoed et. al., 2005, 11). Any information campaign must deliver the complicated issues and theory behind electricity sector privatization to the public in an accurate manner to ensure effective restraint on government operations.

5.2 India

5.2.1 Control of Corruption

India rates at a similar level to Thailand on the World Bank Governance Indicators regarding control of corruption; however applying aggregate quality of governance indicators to India does not reflect the situation of state-level administrations. Unlike the other three countries, which are unitary states, India is a federation. Some states, such as Punjab and Kerala, display reasonably high quality of governance and economic growth; others, such as Bihar and Orissa, are "mired at Sub-Saharan African levels of poverty" (World Bank, 2006c). As discussed in Section 4.3.2, this study explores India's national level electricity policies, while acknowledging the limitations of this approach.

Like Thailand, critics of the electricity sector cite limited dissemination of information to the public as a source of corruption in the electricity sector. For example, during the privatization of state-owned utilities "the methodology for asset valuation/balance-sheet restructuring, a key element in the privatization process, was not disclosed to the general public nor debated, although these were public assets which were being privatized" (Mahalingam et.al., 2006, p.10). An uninformed public has no means to criticize potentially corrupt practices by the government.

At the national level, the Ministry of Power is responsible for "general policy in the electric power sector and issues relating to energy policy and coordination thereof, including details of short, medium and long-term policies cutting across sectors, fuels, regions and intra country and inter country flows; all matters relating to hydro-electric power...and thermal power and transmission & distribution system network; administration of the Electricity Act, 2003; and Rural Electrification," (Indian Ministry of Power, 2004). The Central Electricity Authority (CEA)

supervises policy implementation and prepares five-year National Energy Plans; however, the Ministry underutilizes the expertise of the CEA. The CEA has "the authority to seek information from stakeholders and make recommendations to Ministry of Power on key policy issues, but these are not binding on the latter" (Mahalingam et.al., 2006, p.11). The Ministry is not required to give reasons for rejecting CEA policy advice and relations between the two bodies are not transparent to the public.

A Parliamentary Standing Committee on Energy oversees the operations of the executive; however, no safeguards exist to ensure impartiality of committee members. The operations of the committee are not publicly available. Also, the committee members are not nominated based on their expertise in the field of electricity and the committee "does not even have access to trained or expert staff to assist them in their tasks" (Mahalingam et.al., 2006, p.11). As in Thailand, the potential for misuse of government power is high at the national level.

5.2.2 Regulation

Regulation of the electricity sector happens at both the state and national level in India. Leaving aside smaller tribal states almost all of the 24 of the states have independent regulatory commissions. Regulators possess a high level of institutional authority. The Electricity Act of 2003 empowers regulators to "regulate power purchase from all sources, determine bulk supply tariffs, retail supply tariffs, transmission charges and wheeling charges, including cross subsidy surcharge; issue transmission, distribution and trading licenses; insure fair competition and prevention of market power/monopoly; set service standards; ...[and] advise state government on sector policies" (Mahalingam et.al., 2006, p.17).

Researchers must examine the performance of the regulator not just the content of regulation. State level regulators exhibit adequate levels of transparency and accountability to the public; however, studies site a lack of transparency and independence in selection of regulators. In addition, capacity amongst stakeholders and the public is generally low. Yet despite criticisms, India's regulatory performance to date far outstrips that of Bangladesh.

5.2.3 Markets

Unlike other case studies, India is moving towards a wholesale market, in which "distribution companies retain their exclusive service territories and buy power from competing generators" (Kessides, 2004, p.150). In theory, wholesale markets avoid the conflict of interest occurring in both Bangladesh and Thailand, in which the potential single buyer of electricity will

also be involved in power generation. In both countries, the single buyer will be a restructured version of the former monopoly, state-owned utility: the Bangladesh Power Development Board in Bangladesh and EGAT in Thailand. Regulation and monitoring of these new single buyers will have to be stringent to avoid incumbent corrupt officials simply transferring their power and influence to the newly formed agency.

Researchers predict that the Indian wholesale market will eventually decrease electricity retail prices by increasing competition among generators to sell their electricity to distribution companies and industrial consumers. Yet, according to critics, the current government subsidization of electricity is a far more pressing problem than establishing a wholesale market (Wolak, 2004). Subsidies to large farmers result in:

> India's annual power sector losses amounting to about 1.2 percent of GDP... Financial constraints have reduced spending on operations and maintenance of the electricity grid, contributing further to transmission losses. More importantly, these subsidies and their associated impacts deter private investors from participating in what would otherwise be attractive ventures. (World Bank, 2006e, p.1)

As in Bangladesh, electricity subsidization is highly political. Parties that promise cheap electricity win elections to the long-term detriment of the sector. Tackling these subsidies would improve outcomes for the sector more quickly than the long-term benefits of a wholesale market, which requires considerable time, effort and expertise to establish.

One of the aims of introducing a market for electricity generation is aligning prices with costs of production. By assessing barriers to market creation, I indirectly address the problem of electricity subsidies. Direct assessment of the issue is beyond the scope of this study.

5.3 Pakistan

5.3.1 Control of Corruption

In terms of overall control of corruption, Pakistan performs only marginally better than Bangladesh. In the early stages of the Pakistani IPP process, the government managed to attract investors by setting a bulk rate ceiling instead of using a competitive bidding process to select IPPs based on least-cost operation, fuel and technology choice, and location of power plants. As a result, a large number of the IPPs who gained government contracts "benefited from political support since no clear criteria existed to determine which projects to prioritize when the

Government was faced with negotiating project agreements with almost 80 potential IPP developers" (Fraser, 2005, p.13).

Many factors resulted in the subsequent financial crisis in the Pakistani electricity sector, one of which was the selection of IPPs based on political patronage, as opposed to a bidding process based on efficient operations or entrepreneurial expertise. When too many IPPs came on-stream at once and the government could not afford to pay its bills to them, it reacted by demanding a renegotiation of tariff agreements. The following legal battles between government and IPPs resulted in stranded capacity and decreased investor confidence.

5.3.2 Regulation

The Pakistani experience shows that the "one-stop-shop" model for IPPs can create opportunity for state capture among government elites. The designation of two agencies – Private Power and Infrastructure Board and the Water and Power Development Authority Private Power Organization (WPPO) - to implement the 1994 IPP policy concentrated too much power in the hands of government officials. Policy makers must temper the need to streamline the IPP licensing process with sufficient checks and balances within government agencies.

5.3.3 Markets

Since the IPP crisis of 1998, in which the government threatened to terminate 11 out of 20 IPP contracts, investors have shied away from power generation in Pakistan. Critics argue that the government did not follow the initial push for IPP investment with privatization of government generation, transmission and distribution agencies. As a result, government monopoly power over the sector continued. It is only in 2006, over ten years after sector reform began, that "Pakistan had successfully deregulated the Karachi and Faisalabad Electric Supply Companies," (World Bank, 2006e, p.1). Pakistan is slowly moving to a market for generation although there are still too few IPPs to create efficient competition.

5.4 Lessons Learned and Applicability to Bangladesh

Table 6 Lessons Learned from Case Studies

Lesson	Applicability to Bangladesh
1. Increased capacity amongst stakeholders and the public forces regulators to be more accountable to the public.	**Highly Applicable** • Public and stakeholder knowledge about the intricacies of electricity sector reform is low. • The electricity deficit receives a large amount of public attention. Informed debate over key issues would benefit the sector. • Giving more autonomy to electricity unions is not appropriate for Bangladesh. Policies must be tailored to increase capacity amongst non-union stakeholders and the public.
2. The government can overcome a lack of regulatory accountability if it honours its contracts to IPPs; however, independent regulation improves outcomes in the long term.	**Highly Applicable** • With its nascent regulatory body, the powerful actors in both the Ministry and Cabinet must ensure investor confidence by honouring contracts. • Policies must focus on empowering the Bangladesh Energy Regulatory Commission to ensure long-term improved sector outcomes.
3. Disaggregated, state level regulation may contribute to the performance of regulators.	**Little Applicability** • Bangladesh's centralized government system delegates few tasks to regional government. • Attempting to introduce state level regulators would be politically difficult and may detract from BERC's still-tenuous authority.
4. Eliminating electricity price subsidization to improve sector outcomes	**Highly Applicable** • Electricity price subsidization in Bangladesh is not properly targeted to reach needy recipients. • Many government agencies are bankrupt due to underpricing of electricity • As in India, reforming subsidies will be politically difficult, especially since the population is discontented by poor sector performance and uninformed about the underlying problems.

Lesson	Applicability to Bangladesh
5. IPP selection process must involve competitive bidding based on electricity prices and entrepreneurial expertise.	**Highly Applicable** • The policy framework exists for competitive bidding between IPPs; however, state capture among elite members of the executive branch of the government undermines competitive processes.
6. Policy makers must balance the streamlining of the IPP process with effective oversight within government to mitigate opportunities for state-capture.	**Highly Applicable** • Policies must be carefully designed and implemented to avoid both bureaucratic delays and state capture in the IPP process. • According to IPPs in Bangladesh, the BPDB's "one-stop-shop" department for IPPs is efficient; however, • The Cabinet Committee for Government Purchase wields too much power.
7. IPP growth must be encouraged along with sector privatization and reform to ensure investor confidence.	**Moderately Applicable** • Bangladesh's experience –low IPP investment and steady sector privatization- is the opposite of Pakistan's. • In principle sector privatization has taken place; the challenge now is the implementation of reforms. • Bangladesh is looking to increase IPP participation. It can learn from Pakistan the pitfalls of using a rate ceiling to attract capital quickly.

6 Alternatives

The analysis of interviews and case studies points to four policy alternatives. The first involves the creation of a clear set of guidelines for the IPP process, including solicitation and evaluation of IPP proposals, bid evaluation and selection, and negotiation and awarding of contracts. A second alternative involves a process of strengthening the Bangladesh Energy Regulation Commission by increasing its control over access to funds and authority over IPP licensing and tariffs. A third policy alternative entails a public education campaign together with internal employee development in each electricity agency. The fourth encourages distributed generation among industrialists – or districts – that can be expanded into IPP operations.

The caretaker government has cited energy sector reform as a high priority. Larceny in the power sector has been the motivation of many arrests since January 2007. The interim government also removed the most powerful civil servant in the Ministry of Energy, Secretary ANH Akhtar Hossain on accusations of bribery, favouritism and corruption. As another sign of policy reform, the government raised prices for electricity, following through on a politically contentious yet financially necessary policy that the previous government had stalled ("Electricity Price Hikes", 2007).

Although there is political will to undertake "tough love" policies such as criminal prosecutions of meter readers or mass firings of corrupt officials, I have refrained from including them in my study. The political system in Bangladesh is volatile: the interim government of today could been overthrown and the previous corrupt elites reinstated. My aim in this study is to present policy options that effectively expose and eliminate the underlying avenues through which corrupt practices take place. Policies should ensure property rights for IPPs regardless of the party in power.

6.1 IPP Guideline Document

- **Goal:**
  - Increase efficiency, accountability and transparency in the IPP process and build investor confidence.
  - Break up the Cabinet's bottleneck of control over the IPP process.

- **Policy Mechanisms:**
  - Drafting of **clear guidelines for each step of the IPP process**, including solicitation and evaluation of IPP proposals, bid evaluation and selection, and negotiation and awarding of contracts.
  - The guidelines would include criteria for qualification to submit bids, a standardized format for request for proposals and bids, a consistent weighting system for comparing bids, and a series of clear commitments for both the IPP and government if both parties reach an agreement.
  - The guidelines would outline which government agencies have authority to select bids. In addition, the guidelines would describe a system of checks and balances in place for oversight of the process, including government accountability in the case of re-tendering and ability for both parties to log complaints to BERC, (Interview 23, 2006).
  - The Power Cell would make the guidelines publicly available on its website.

- **Actors:**
  - **Donor Agencies**: Due to their independent funding and high level of expertise, donor agencies are well situated to act as advisors and consultants in writing regulation. Donor agencies such as the World Bank are compelled to withdraw their funding for projects that do not meet certain procurement standards, which could be incorporated into the IPP Guidelines.
  - **Power Cell**: the main impetus for this policy must come from within the Bangladeshi government. The Power Cell policy division of the Ministry of Energy has the mandate and expertise to spearhead reform.
  - **Existing IPPs**: Policy makers should seek advice and comments from existing IPPs regarding which aspects of the project development process they should clarified in the guidelines.

- **Time Line:**
  - **One Year:** Gaining stakeholder input, creating a draft, vetting draft, incorporating inputs, and finalizing the document would take one year.

- **Measures of Successful Implementation:**
  - As a part of the policy process, policy makers could undertake interviews with current IPP operators before and after the creation of the document to monitor its effect on investor confidence.
  - Increased number of IPP bids when the government announces a tender.

6.2 Strengthening the Bangladesh Energy Regulatory Commission

- **Goal:**
  - Bring BERC to its full capacity of operation including oversight of IPP licensing and service delivery contracts to downstream utilities, as well as safety measures and quality control. IPPs contracts, including electricity rates, must be just and reasonable, (Interview 33, 2007).
  - Improve investor confidence by proving that BERC will enforce regulation, adjudicate relations between IPPs and government through arbitration and mediation, and create a level playing field for all IPPs.

- **Policy Mechanisms**
  - **USAID Consultant:** In 2006, a consultant from USAID acted as an advisor to the members of BERC. USAID should make this position official and provide funding.
  - **Stricter monitoring of time lines:** slowing the process of vetting and approval for BERC policies and operating procedures has been a means for the Ministry and Cabinet to undermine the BERC's operations. BERC should deliver any BERC policies and operations requiring approval to the adjudicating body together with a deadline for comments or approval.
  - **Greater control over funding:** Donor agencies should take responsibility for funding for BERC for a period of at least five years until BERC has established its authority and proven its necessity within the power sector. The BERC Act allows funding through grants from donor agencies.
    - Funding should be contingent on BERC meeting standards of efficiency and accountability. Donors would scale back funds over time to increase self-sufficient operation of BERC.
    - Funding arrangements should also include training on theory and implementation of energy regulatory systems to increase capacity of relevant staff, (Interview 33, 2007).
- **Actors:**
  - **BERC**
  - **Power Cell** and other reforming forces within the caretaker government and judiciary.
  - **Large donor agencies** - such as the World Bank, Asian Development Bank and USAID- with the ability to influence the behaviour of the Ministry of Energy and Cabinet.

- **Time Line:**
  - **Short-term** – Since the job description already exists, establishing a consultant position in BERC would require only as much time as needed to leverage adequate funds and hire an appropriate person. A two to three month period would be adequate.
  - **Medium-term** – Energy sector reform is a high priority of the caretaker government. In order to maintain stakeholder and public support, the government must act quickly to realize meaningful reforms. They must publicize their support for greater BERC capacity and autonomy.
  - **Long-term** - Because elites within the Cabinet and Ministry of Energy are reluctant to hand over control to BERC, the enforcement of time-line and funding reforms will be a long-term endeavour. A period of 5 to 10 years would be necessary to ensure

that the BERC gains credence and authority within the electricity sector. Following BERC licensing and tariff regulations within the IPP process must become force of habit for all stakeholders. A phased approach will be necessary to ensure the establishment of adequate staff capacity, control of funds and timely dealings with other government agencies.

- **Measures of Successful Implementation:**
  - The ability of BERC to perform its duties effectively in the short and long term, measured through continued monitoring and reporting of BERC's interaction with stakeholders and other government departments. Monitoring to be undertaken by BERC and donor agencies.

6.3 Public and Electricity Employee Education Campaign

- **Goals:**
  - Engage the public in informed debate over electricity policy issues.
  - Force government entities to live up to their obligations by increasing public scrutiny and engagement in the policy process.
  - Explain the necessity of rate increases to the public due to reallocation of subsidies.
  - Create a forum for ongoing dialogue between the public and electricity sector stakeholders.
  - Increase electricity sector employee engagement and understanding of sector reforms. Many of those interviewed either commented on or displayed a lack of understanding of current policies and the implications for their work, (as evidenced by comments made during Interviews 2, 3, 9, 10, 11, 13, 16, 21, 27, 31).

- **Policy Mechanisms:**
  - A campaign of **billboards, radio shows and television programs** designed to inform a largely uneducated public about the basic workings of the electricity process, the government's role in providing power to citizens and citizen's role in managing their consumption of electricity.
  - A touring series of **public lectures** given by academics in major cities.
  - **Electricity bills should include a breakdown of charges** from each segment of the process (generation, transmission, distribution and retailing), (Interview 17, 2006).
  - **Mandatory professional development** for all employees of generation, transmission, distribution and retail agencies including study of:
    - Recent policy adopted by the Ministry of Energy and its implications for the energy sector;
    - Various entities that constitute the Bangladesh electricity sector and their roles and responsibilities;
    - Changing theories of electricity sector organization and electricity market structure;
    - Quality control and standards set by BERC;
    - Calculation of efficient electricity rates based on market principles.

- **Actors**
  - **Power Cell, BERC, BPDB**
  - **Dhaka Chamber of Commerce**
  - **The Press and Academia**
  - **Citizen's groups**

- **Time Line:**
  - Program design would take **six months to a year**
  - Information campaigns, lectures and professional development would be ongoing.

- **Measures of Successful Implementation:**
  - Ability of the government to introduce rates proportionate to marginal electricity production costs without causing violence and upheaval in the country.
  - Increased knowledge and skill development of electricity sector employees.

6.4 Distributed Generation

- **Goal:**
  - Mitigate risk to individual investors by encouraging communities or groups of entrepreneurs in a particular industry to invest in IPPs for their own distributed generation use.
  - Mitigate corrupt practices by creating a sense of ownership, financial responsibility to the suppliers and efficient price signalling to consumers for high quality electricity service (Interview 1, 2006).
  - Force government entities to live up to their obligations by increasing public scrutiny and engagement in the policy process.

- **Actors**
  - **Garment factory owners**
  - **Citizen Groups** (although adequate levels of investment capital and financial and technical knowledge may be lacking).
  - **Rural Electrification Board** – the REB has a long history of superior managerial performance in distribution to rural areas. It has recently expanded its mandate to include generation of electricity and would be a source of institutional knowledge on setting up distributed generation (Interview 21, 2006).
  - **Other government entities** including the BPDB, Power Cell, and distribution agencies.
  - **Donor Agencies** to provide financial and technical expertise as needed.

- **Policy Mechanisms:**
  - This alternative requires a **bottom-up approach**: it would be initiated and pushed through by citizen's groups such as garment factory owners and community organizations.
  - Most government employees and citizens are unaware of the fact that a policy framework exists within the Captive Power Policy for distributed generation through the government owned distribution and transmission network (as evidenced by comments made during Interviews 2, 3, 9, 10, 11, 13, 31). Citizens groups must carefully prepare their proposals based on government policy documents.
  - Citizens groups may not possess the adequate level of financial and technical knowledge to build, own and operate a small generation and distribution facility. Consultants from donor agencies and the REB may be required to facilitate undertakings.
  - Groups that propose distributed generation projects should document the entire process undertaken and all their interactions with government agencies. They should also try to gain media attention to build awareness of innovative projects in electricity generation in Bangladesh.

- **Time Line:**
  - **3 to 5 year process**.
  - Distributed generation groups should be ready for long-term engagement with the government. Even though a policy framework exists, there has been little attention given within the government to the technical, personnel or organizational requirements to implement distributed generation.

- **Measures of Successful Implementation:**
  - Achievement of long-term goal of operating distributed generation facilities.
  - Achievement of incremental goals: forcing government to implement existing policy.
  - Yearly analysis of project implementation will be required to monitor long-term and incremental goals.

7 Evaluation

7.1 Criteria Used to Assess Alternatives

Criteria describe the standards by which one judges the alternatives suggested in Section 6. I have based my criteria on suggestions from interviewed members of the Bangladeshi electricity sector and my own impressions of the qualities a policy must possess to navigate its way into effective implementation and results. Table 7 outlines both the criteria used to assess policy alternatives and measurement of criteria appropriate to the political scenario previous to the January 2007 military coup. Table 8 augments criteria definitions and measures to reflect the new political situation in which many corrupt stakeholders remain powerful but there is potential to undertake ambitious reforms within a narrow timeframe.

Table 7 Criteria and Measures for the pre-January 2007 Scenario

Criteria	Definition	Measures
Control of Corruption	The alternative should include mechanisms to effectively tackle corrupt practices among the government and stakeholder groups	• Ability to balance accountability and monitoring with efficient implementation of the policy • Ability to balance the devolution of authority with streamlined implementation practices • Ability to strengthen independent oversight bodies • Ability to involve public and stakeholders in policy process • Ability to ensure efficiency of privatized entities and IPP generation • Ability to reinforce a competitive process of awarding IPP contracts • Ability to reduce non-technical system loss, bribery and false meter reading
Political Feasibility	The alternative should receive enough support from the relevant actors within the government to ensure successful implementation.	• Ability to engage reform-minded actors within the government • Ability to circumvent obstruction by corrupt government elites • Ability for corrupt elites to reform their practices quietly and save face • Necessitates minimal reliance on financial and technical support by donor agencies, which is a source of embarrassment for many Bangladeshi elites. • Ability to insure property rights for government • Ability to be effective: maximum number of customers realize improved electricity service
Stakeholder	The alternative should be	• Ability to reduce transaction costs for IPPs dealing with

Criteria	Definition	Measures
Acceptance	acceptable to key stakeholders beyond government agencies, such as IPPs, industrialists, consumers, donor agencies and the larger public, 70% of who have no access to electricity.	government. • Ability to insure property rights for IPPs • Ability to increase clarity of the IPP process, from initial contract tender and awarding to building, owning and operating IPPs • Ability to meet donor agency requirements of efficient pricing and sector operations • Ability to increase consumer and wider public understanding and engagement with the IPP process
Economic Efficiency	The alternative should be cost effective in the long-term. It should promote overall sector efficiency.	• Ability to insure property rights for both IPPs and government, increasing investor confidence • Ability to ensure competitive number of IPPs enter market (price competition) • Provision of incentives to increase productivity of labour and capital (Interview 29, 2006) • Ability to ensure long-term financial sustainability of disaggregated sector entities in generation, transmission, distribution and retail of electricity
Ease of Implementation	The alternative should be tailored to overcome or mitigate specific blockages with the Bangladeshi policy implementation process. The alternative also must take into account limitations in infrastructure and human capital.	• Level of financial investment needed • Ability to negotiate diverse stakeholder interests (government, IPP investors, industrial and household consumers, public, donor agencies) • Ability to overcome corrupt elite interests that prefer the status quo • Ability to be successful with limited infrastructure capacity • Ability to be successful with limited public/employee understanding of market structures and policy process (Interview 21, 23)

Table 8 provides several auxiliary measures for the control of corruption, political feasibility and stakeholder acceptance criteria. The measures reflect changes in criteria definition due to the new socio-political situation facing Bangladesh since the soft military coup of January 2007. The caretaker government has both the opportunity of undertaking major reforms to the sector and the constraint of a public and stakeholders with very low tolerance for government mismanagement. The adjusted criteria reveal the ability of policy alternatives to be enacted quickly, with tangible results to reassure the public of the government's commitment to reform.

Table 8 Additional Criteria and Measures for Post-January 2007 Scenario

Criteria	Definition	Measures
Control of Corruption	The alternative should include mechanisms to effectively tackle corrupt practices among the government and stakeholder groups	• Ability of policy to provide persistent reforms that will not be easily derailed by future governments • Ability of policy to balance reform that is substantial yet feasible • Ability of policy to be implemented quickly with obvious results
Political Feasibility	The alternative should receive enough support from the relevant actors within the government to ensure successful implementation.	• Ability for caretaker government to take action quickly on the policy design and implementation • Results of policy must be able to be achieved within one-year with maximum public exposure • Increased ability to engage reform-minded members of government, who have greater ability to operate
Stakeholder Acceptance	The alternative should be acceptable to key stakeholders beyond government agencies, such as IPPs, industrialists, consumers, donor agencies and the larger public, 70% of who have no access to electricity.	• Ability for policy to assure stakeholders etc. of government's commitment to sector reform

7.1.1 Criteria Justification and Explanation

Pre-January 2007 criteria were chosen to reflect the complicated political situation in Bangladesh, which suffered from "a non-functional parliament, entrenched corruption, a culture of violence, both political and non-political, weak judicial and law enforcement agencies... poverty, illiteracy and poor development indicators for women" (International Crisis Group, 2006). In the case of Bangladesh, a policy to increase IPP generation must:

- Contain mechanisms to address corrupt practices by government officials, IPP operators, potential investors, industrialists, domestic consumers and the larger public.
- Address the political realities in Bangladesh, in which both a high level of state capture and largely uninformed yet vociferous public scrutiny occurs regarding the electricity sector.
- Gain acceptance from stakeholders such as IPPs, industrialists and consumers, who can easily ignore policies since there is a low capacity in Bangladesh for regulatory oversight.

- Promote long-term cost-effectiveness since most electricity sector entities are currently bankrupt and unable to support their own operation or honour IPP contracts in a timely manner.
- Take into account limited infrastructure sophistication and reliability as well as lower levels of familiarity among practitioners with the concepts and implementation of a largely unfettered market for electricity generation overseen by an independent regulator.

Post-January 2007 changes to criteria and measures reflect the need for policies to be implemented quickly with tangible, widespread results. The changes made should also be persistent: if corrupt government officials return to power in the future, they should not be able to undermine reforms in the sector.

7.1.2 Ranking of Criteria

Of the five criteria selected, control of corruption holds the greatest importance in ranking policy options. In order for a market to operate, there must be sufficient trust among those entering the transaction that both parties will honour the terms of the contract. Policies that can balance the need for accountable, transparent and expedient practices of both government and IPP investors will gain the support of the public and donor agencies while encouraging efficiency in the sector. I give the criterion a double weighting because corruption has been so endemic in the electricity sector in Bangladesh and has been the main barrier to IPP investment.

Since the military coup of January 2007, which removed a large number of corrupt elites in the energy sector, the political feasibility of a policy gains importance as a criterion since there will be less resistance to policies that tackle corrupt practices and, therefore, greater responsibility placed on the government to get results. The caretaker government has tenuous legitimacy, and must realize widespread and quick improvements in public sector performance if it is to survive. It has arrested numerous senior politicians and businessmen who engaged in embezzlement linked to the power sector. It has yet to undertake much in the way of reform but must do so soon to maintain public support.

Policies that meet the first three criteria will largely fulfil economic efficiency and ease of implementation measures as many of these feed into one another. Although some of the measures of each criterion overlap, my goal is to organize my analysis and identify the trade-offs decision makers will have to face when choosing a policy. The measures are reflective of the complex nature of policy formation in country where some stakeholders are corrupt and some are not. For

example, ensuring property rights may both increase and decrease a policy's chance of success so I include it in political feasibility, stakeholder acceptance and economic efficiency.

7.1.3 Omitted Criteria

This study differs from many policy analyses in that I do not include the criteria of equity to assess policy options. Although an important aspect of general energy policy, policies to increase investment from the private sector in power generation essentially promote market processes. Markets increase productivity and output but fail to ensure equity of supply to consumers. In fact, studies show that "although a more market-oriented approach to the energy sector can provide important benefits, liberalization can have negative effects on the poorest people, who cannot afford prices set by competitive markets," (Karlsonn and McDade, 2001, p.10). Although increased investment in IPPs creates greater electricity capacity and competition, the benefits of the market – electricity prices aligned to marginal costs – accrue primarily to large industrial consumers.

In the case of markets for electricity, one must view equity as a long-term goal. In Bangladesh, the equity implications of the status quo are highly regressive: the state subsidy to the power sector accrues to the third of the population with electricity access. In the short term, markets can increase reliability and efficient pricing to those who can afford it, leading to greater investment and GDP growth. Some benefit may accrue to workers, such as garment factory employees, in the form of more employment. Financial efficiency of the electricity sector will free public funds for the government to direct towards much needed health, education and poverty alleviation programs. Decision makers should consider separate policies to increase access to rural areas and the poor, such as small scale renewable energy sources that increase security of supply.

Although an important consideration in energy policy, I did not include environmental impacts as a criterion in this study as it is beyond the scope of my study to examine the resource used for power generation. Most IPPs facilities will be combined cycle gas turbines due to Bangladesh's large source of natural gas. Combined cycle gas turbines "use both gas and steam turbine cycles in a single plant to produce electricity with high conversion efficiencies and low emissions" (European Environment Agency, 2007) when compared to other generation techniques.

In addition, Bangladesh's economy suffers largely because of limited reliable electricity sources. Most large scale renewable energy sources such as wind power have higher marginal

costs and less dependability than gas powered turbines, especially since Bangladesh does not need to rely on gas imports. Policies that increase the country's dependable generation capacity will significantly increase citizen's well-being.

7.1.4 Measures Explanation and Justification

Control of Corruption: for the measures of corruption, I assess the ability of the policy to balance openness with efficiency. Placing too much power in the hands of government or business elites invites state capture. At the same time, government elites can slow the IPP process by increasing the number of departments needed to approve a document or operation, causing inefficient service delivery to IPPs and other government departments. (Interview 10, 2006). Post-January 2007 measures focus on the policy's ability to provide persistent reforms that are wide-reaching yet achievable in a short-time frame.

Political Feasibility: Measures for this criterion distinguish between members of the government who are reform-minded and those who benefit from the status quo, (Interview 10, 2006). This distinction is critical because a policy's success relies on its ability to engage honest workers while ensuring that they are not penalized for their actions. Post-January 2007 measures address the government's increased utilize pro-reform employees and realize reform within a limited time-frame.

Stakeholder Acceptance: Measures reflect the diversity of stakeholders groups: current IPPs, potential investors, donor agencies, industrial consumers, household consumers and the larger public with little or no access to electricity. Policies in the post-January context must reassure diverse stakeholders of the government's commitment to reform.

Economic Efficiency & Ease of Implementation: Measures for this criterion follow from those related to control of corruption, political feasibility and stakeholder acceptance. To promote economic efficiency, a policy must ensure the property rights of IPPs and government. If a policy mitigates corrupt behaviour by stakeholders while garnering their support, it will be less complicated to implement.

7.1.5 Scoring Method

My aim is to present Bangladeshi stakeholders with a set of realistic, manageable alternatives given the large impediments facing reform of the electricity sector. I assess the ability of each alternative to achieve the overall criterion by examining it with respect to measures. I

base my assessment on data provided in interviews and case studies. If the policy alternative has the potential to accomplish the measure, I give it a positive score (1), semi-positive score (0.5), or a zero score (0) if it cannot fulfil the measure. I then aggregate results and divide by the total number of measures for the criteria so that the different aspects of each policy can be organized and compared in a systematic manner.

For the criteria of control of corruption, I give it double weighting because corruption is such an intrinsic part of the electricity sector in Bangladesh and the main barrier to IPP investment. Please see Appendix B for an example of the scoring method using the IPP guidelines alternative and control of corruption criterion.

7.2 Analysis of Alternatives using Criteria

I analyze each alternative by its predicted ability to meet the selected criteria. The reader should note that the study does not include an empirical test of alternatives; the results are estimates of how well potential policies can address the specific situation of IPPs in Bangladesh. I assign measurements for each criterion based on information from interviews and case study data. Results are not prescriptive: I aim to present decision makers with a series of trade-offs to consider when analyzing IPP related policy options.

Table 9 provides an overview of alternatives according to pre-January 2007 measures of criteria. Table 10 augments the discussion with an analysis of the additional measures relating to the changed political situation since the soft military coup.

Table 9 Analysis of Alternatives Using Pre-January 2007 Criteria and Measures

Criteria	Alternatives			
	(1) IPP Guidelines	(2) Strengthening BERC	(3) Education Campaign	(4) Distributed Generation
Control of Corruption (weighted x2)	**Score: 0.8** Non-binding (not legislation or law): could easily be ignored by government, therefore, undermines ability to meet measures: - Balances accountability and monitoring within text of document (0.5) - Streamlines IPP process to avoid manipulation of different policies by investors or government (Interview 23, 2006) (0.5) - Clearly delineates circumstance for re-tendering and recourse (Interview 23, 29, 2006) (0.5) - Makes document publicly available (0.5) - Tendering based on least-cost generation improves efficiency (0.5) and competition between IPPs (0.5)	**Score: 1.4** - USAID consultant would advise on best-practices to insure accountability of BERC's operation and demand efficient dealings from other government bodies (1) - Careful planning would create streamlined implementation (0.5) - Greater control over budget would increase BERC autonomy and decrease reliance on uncooperative Ministry and Cabinet bodies (Interview 2, 2006) (1) - BERC increases stakeholder participation through public hearings (1) - Strengthening of BERC's ability to monitor sector and insure efficient practices (1) - Limited scope: BERC has no control over awarding of IPP contracts, which is mandate of the Power Cell (0.5)	**Score: 0.6** - Public and employee understanding of rate structure reduces possibility of corruption (Interview 1, 2006). Informed public becomes another source of sector oversight (1) - Engagement of employees with reform process may increase their productivity (0.5) - Engagement of public with reform process may reduce bottom-up corruption such as electricity loss and false meter reading (0.5) - Difficult to tailor campaign to various education levels of the public (0)	**Score: 1.4** If investors possess sufficient technical and financial expertise, projects could: - Balance accountable yet efficient practices (1) - Streamline implementation by cutting government out of much of the process (1) - Increase sense of community responsibility to tackle theft of power and non-bill payment (interview 1, 2006) (1) 2) Increase efficiency by rationalizing customer to employee ratio (Fitchner, 2006) (1) 3) Provide incentives to use state of the art technology such as pre-paid, sealed and calibrated meters (Interviews 4, 15) and machinery maintenance (Interview 29) (1) - Captive power policy contains several loopholes (wheeling charges, for example) (Interview 2) (0)
Political Feasibility	**Score: 0.6** - Reform-minded individuals and agencies within government will support the initiative (1) - Elites in the Cabinet and Ministry will resist a policy that impedes on their authority. (0) - Allows corrupt elites to quietly reform for new project, but exposes past corruption by comparison (0.5) - Minimal reliance on donor agencies (1-year timeline, little funding needed) (1) - Assures government property rights (1)	**Score: 0.3** - Some support amongst pro-reform government agencies. (1) - Will limit powers of government elites and expose their previous corrupt practices (0) - Donor agency control of budget may insult senior members of the Bangladeshi government. (0) - Assures property rights for government (0.5)	**Score: 0.5** -Some support amongst pro-reform government agencies. (1) -Some resistance from corrupt government elites as information campaign will expose poor sector management and increase the level of informed public scrutiny. (0.5) - Resistance from corrupt elites can be overcome, especially during lecture series (1) - Some reliance on donor agency financing and expertise (0.5)	**Score: 0.3** – Strong resistance among all government agencies to allow limited distribution rights to generators (Interview 20, 2006) (0) - Some support from policy department, although other departments and agencies are not aware of policy framework for distributed generation (0.5) - Potential for large number of customers to achieve access to good quality electricity (1)

	Alternatives			
Criteria	(1) IPP Guidelines	(2) Strengthening BERC	(3) Education Campaign	(4) Distributed Generation
Stakeholder Acceptance	**Score: 0.8** - Investors will welcome the clear articulation of each step of the IPP process in one comprehensive document (Interview 23, 2006) (1) - Some ability to insure IPP property rights (0.5) – The public will support greater accountability and openness in the IPP process (1) - Meets donor agency requirements (1) - Some increase to public understanding of process (0.5)	**Score: 0.7** - IPPs and potential investors will welcome measures to ensure property rights. (1) - Some resistance from entrepreneurs profiting from current system (0.5) - Increased donor involvement and compliance with standards will anger some stakeholders (0.5) - Public will support measures to curb elite government and IPP corruption (1) - Some larger public engagement (0.5)	**Score: 0.4** - Lowered transaction costs for IPPs dealing with better-informed public servants (1) - IPPs may fear public scrutiny will negatively affect business (0) - High public demand for reliable information and increased government competence (1)	**Score: 0.7** - Reduced transaction costs in the long-term (0.5) - Profitable for IPPs if property rights are guaranteed (1) -Some may be dubious due to strong government resistance (0.5) - Meets donor agencies requirements (1) - Strong initial support from public must be consolidated by long-term reliability of electricity service (0.5)
Economic Efficiency	**Score: 0.5** – The document will provide a clearly defined set of property rights for IPPs and government (1) - Some ability to encourage more potential IPPs to enter the market (0.5) - Greater competition will encourage higher productivity from other IPPs (0.5) and government agencies (0.5)	**Score: 0.9** - Long-term potential returns on investment (0.5) - Increase non-partisan enforcement of property rights, investor confidence (1) - Increased IPPs entering market will increase competition (1) - Larger number of IPPs encourages govnt. productivity (1) and financial responsibility (1)	**Score: 0.1** - Low tangible return on investment (0) - Indirect effects: greater public scrutiny will decrease inefficiencies due to corruption; increased public employee capacity with increase productivity. (0.5)	**Score: 0.6** - Substantial potential returns to investment (1) - Increased competition for government distributors = increased quality of service (1) - In the long term, could increase competition for customers/ distribution areas (1) - Contingent on honoured property rights, which are not ensured by policy (0)
Ease of Implementation	**Score: 0.5** - Few costs involved (1) – The Power Cell and donor agencies possess the expertise to produce the guidelines (1) - Resistance from corrupt government elites may slow the process (0) - Not directly contingent on infrastructure capacity (0.5)	**Score: 0.4** - Requires medium term sustained financial support (0.5) - Resistance from corrupt elites will require politically strategic implementation (0.5) - Increased donor agency involvement may insult government departments in the short term (0.5) - Not directly contingent on infrastructure capacity (0.5)	**Score: 0.6** - Straightforward if sufficient money and personnel are assigned to design and implement (0.5) however, both these inputs are limited (0.5) - High degree of public enthusiasm for good information will overcome corrupt elite resistance (1) - Not directly contingent on infrastructure capacity (1)	**Score: 0.1** – Policy framework exists; however, strong resistance from government elites will slow implementation process. (0.5) - Poorly maintained infrastructure (distribution lines) and limited technical expertise will hamper implementation (0) - Large Investment required (0)
TOTAL:	**3.2 / 6**	**3.7 / 6**	**2.2 / 6**	**3.1 / 6**

Table 10 Analysis of Alternative with Additional, Post-January 2007 Criteria and Measures

	Alternatives			
Criteria	(1) IPP Guidelines	(2) Strengthening BERC	(3) Education Campaign	(4) Distributed Generation
Control of Corruption (Total of 10 measures and x2 corruption weighting)	**Score: 0.7** - Persistence of reforms (0) - Substantial yet feasible reform (0) - Quick implementation with obvious results (0.5)	**Score: 1.4** - Persistence of reforms (1) - Substantial yet feasible reform (1) - Quick implementation with obvious results (0.5)	**Score: 0.2** - Persistence of reforms (0) - Substantial yet feasible reform (0) - Quick implementation with obvious results (0)	**Score: 1.5** - Persistence of reforms (1) - Substantial yet feasible reform (1) - Quick implementation with obvious results (0.5)
Political Feasibility (Total of 9 measures)	**Score: 0.6** - Ability to design and implement immediately (1) - Maximum public exposure (0.5) - Increased ability to engage reform minded actors (0.5)	**Score: 0.4** - Ability to design and implement immediately (1) - Maximum public exposure (0.5) - Increased ability to engage reform minded actors (1)	**Score: 0.6** - Ability to design and implement immediately (0.5) - Maximum public exposure (1) - Increased ability to engage reform minded actors (0.5)	**Score: 0.5** - Ability to design and implement immediately (0.5) - Maximum public exposure (1) - Increased ability to engage reform minded actors (1)
Stakeholder Acceptance (Total of 6 measures)	**Score: 0.8** - Assures government's commitment to reform (0.5)	**Score: 0.8** - Assures government's commitment to reform (1)	**Score: 0.4** - Assures government's commitment to reform (0.5)	**Score: 0.8** - Assures government's commitment to reform (1)
Economic Efficiency	**0.5**	**0.9**	**0.1**	**0.6**
Ease of Implementation	**0.5**	**0.4**	**0.6**	**0.1**
TOTAL:	**3.1 / 6**	**3.9 / 6**	**1.9 / 6**	**3.5 / 6**

7.3 Summary of Analysis

Table 11 below provides a summary of the analysis of each alternative according to criteria. Decision makers should not evaluate alternatives solely as a collection of positive and negative attributes. Rather, the summary serves to highlight potential areas of resistance or obstacles in implementation of various alternatives. Further, decision makers should not view alternatives as mutually exclusive; all four alternatives could be potentially be implemented simultaneously depending on resources and will. Due to the chameleon nature of the political situation in Bangladesh, I attempt to offer decision makers with a variety of options that they can implement when a window of opportunity presents itself. A summary of key findings follows in Section 7.4.

Table 11 Summary Analysis Using Pre-January 2007 Criteria and Measures

	Alternatives			
Criteria	(1) IPP Guidelines	(2) Strengthening BERC	(3) Education Campaign	(4) Distributed Generation
Control of Corruption	0.8	1.4	0.6	1.4
Political Feasibility	0.6	0.3	0.5	0.3
Stakeholder Acceptance	0.8	0.7	0.4	0.7
Economic Efficiency	0.5	0.9	0.1	0.6
Ease of Implementation	0.5	0.4	0.6	0.1
TOTAL (out of 6)	**3.2**	**3.7**	**2.2**	**3.1**

Table 12 Summary of Analysis Using Post-January 2007 Criteria and Measures

	Alternatives			
Criteria	(1) IPP Guidelines	(2) Strengthening BERC	(3) Education Campaign	(4) Distributed Generation
Control of Corruption	0.7	1.4	0.2	1.5
Political Feasibility	0.7	0.4	0.6	0.5
Stakeholder Acceptance	0.8	0.8	0.4	0.8
Economic Efficiency	0.5	0.9	0.1	0.6
Ease of Implementation	0.5	0.4	0.6	0.1
TOTAL (out of 6):	**3.1**	**3.9**	**1.9**	**3.5**

7.4 Key Findings

- In the pre-January 2007 analysis, the two alternatives that scored highest in terms of corruption control also scored lowest in terms of political feasibility and ease of implementation. Strengthening BERC and encouraging distributed generation are ambitious policies because both challenge the status quo of elite state capture. Both require the expertise and financial support of donor agencies, which is unpalatable to many Bangladeshis. Yet, both policies have significant potential to curb elite corruption in the long-term. Providing a choice of generators raises consumer's "awareness of the relation of costs to prices, increase the political and economic pressure for improved cost allocation, and reduce the scope for government and/or regulators to favor particular interest groups" (Kessides, 2004, p.146). An independent regulator that assures property rights is essential to ensure the success of distributed generation by IPPs.

- In the post-January 2007 context, both strengthening BERC and encouraging distributed generation fared better in terms of political feasibility. The military coup has opened an avenue for pro-reform bureaucrats to voice their opinions with less fear of recrimination. Also, both alternatives have greater immediate impacts, which can be displayed to the public as evidence of the government's commitment to reform.

- Achieving distributed generation amongst neighbourhoods or industrial groups will require a great deal of persistence. I found that many managers of distribution agencies were unaware that the policy framework exists to enable this alternative. Most were adamant that it did not. Those stakeholders willing to embark on this alternative may have to consider investment in their own distribution lines depending on the level of resistance from their local government owned distributor and the technical capacity of the distribution lines. If successful, this alternative has the ability to mitigate corruption significantly, as displayed by its increased score in the post-January 2007 analysis.

- Drafting of IPP guidelines will likely have a high level of support from the public and stakeholders; however, the policy does not include substantive mechanisms to curtail elite corruption except for public circulation of the document. Words on paper are not as effective a curb on corruption as the whistle blowing capability of BERC or the competitive threat of uninterrupted electricity from a local distributed generator. This inability to deter corrupt practices is reflected in the lower score for control of corruption post-January 2007.

- The success of both a public education campaign and ongoing professional development for electricity sector employees depends on the focused effort of one government department to create and implement the program with stakeholder input. The Ministry would need to create a task force or department to undertake the initiative. The task force could liaise with education and advertising specialists to produce billboards and pamphlets suitable for different education levels. The task force could seek advice and input from donor agencies to design educational seminars for power sector employees including policy updates, tariff design and functions of different sector agencies and how they affect the operation of the sector.

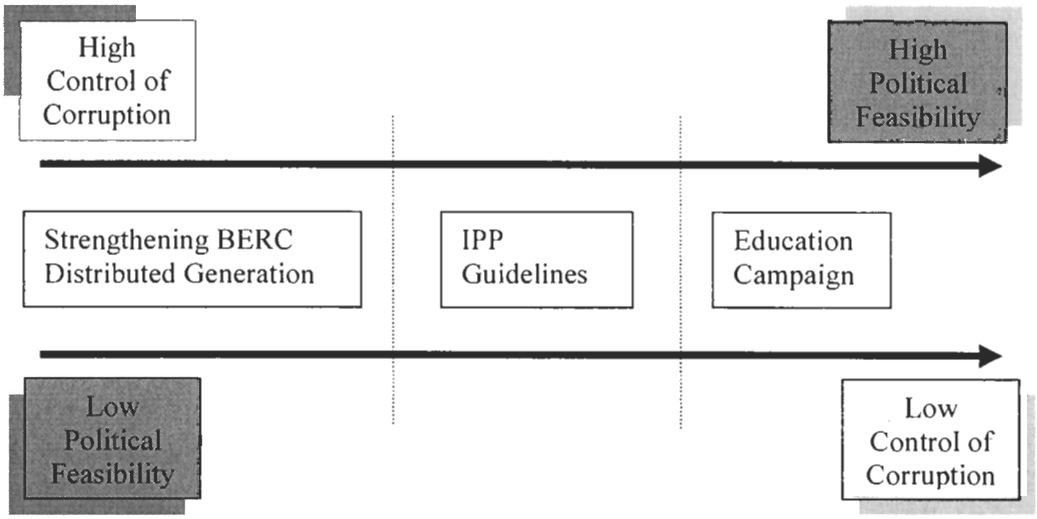
  Difficulties for this alternative include:

  1. Targeting public education campaign to various degrees of literacy and education in Bangladesh
  2. Convincing decision makers to allocate staff and funds to a project with only indirect economic returns that are difficult to measure

- The education campaign is a less attractive option in the post-January 2007 scenario, due to its limited ability to control corruption and provide immediate, tangible results. These results are reflected in the increased divergence in total scores between the pre- and post-January 2007 analyses. The distributed generation and strengthening BERC options improve in total score, while the education campaign decreases in comparative overall effectiveness.

8 Recommendations

Figure 7 Continuum of Control of Corruption and Political Feasibility



Due to their distinct mechanisms to tackle corruption, strengthening BERC and fostering distributed generation possess the highest potential for success even though they will be politically difficult to implement. In fact, the soft-military coup of January 2007 has opened a policy window for electricity sector reform, increasing the political feasibility of both alternatives. In January, the interim government has removed the most powerful civil servant in the Ministry of Energy, Secretary ANH Akhtar Hossain on accusations of bribery, favouritism and corruption. Effective as of February 5, 2007, the government raised prices for electricity, following through on a politically contentious yet financially necessary policy that the previous government had stalled ("Electricity Price Hikes", 2007). The Interim government Energy Advisor, Tapan Chowdury, has held meetings with "private operators for speedy installation of rental power plants," ("Snapshots", 2007).

In comparison to Thailand, which has created a reliable set of electricity regulations despite a weak regulator, the Bangladeshi government has decreased investor confidence by failing to honour existing IPP contracts and re-tendering potential contracts in the late stages of

negotiation (Interview 23 & 26, 2006); (Khan, 2007). The government has been unable to curb corruption to the extent needed to secure property rights for IPPs. The government must strengthen the position of BERC to ensure that IPPs contracts are just and reasonable, (Interview 33, 2007).

Present donor agency support eases the logistical burden of implementing a policy to strengthen BERC. Since its inception in 2003, BERC has requested and received two consultants from USAID. They have requested a third consultant and received approval from USAID (Interview 31, 2007). USAID should hire and place this consultant as soon as possible to facilitate current undertakings, such as the completion and government approval of fundamental administrative documents like recruitment rules and pay scale for BERC employees. With administrative processes in place, BERC can more efficiently continue with the business of regulating: approving licences and creating an efficient tariff and rate methodology for IPPs.

Furthermore, the World Bank has recently approved a loan to support the work of BERC (Interview 31, 2007). Donor agencies such as USAID and the World Bank are aware of the difficulties of setting up a watchdog organisation such as BERC and taking steps to ensure its proper functioning. They must continue to do so for five to ten years, with decreasing support as BERC becomes more self-sufficient.

The Thai example shows that property rights can be achieved under autocratic rule, reinforcing the argument that "even pro-market dictators can secure property-rights as a matter of policy choice," (Glaeser et. al., 2004, p.271). By cementing the conditions under which BERC can fully operate –increased employee capacity and financial autonomy- the caretaker government can ensure pervasive, long-term conditions for honoured contracts between IPPs and government.

8.1 Distributed Generation

Although a great deal of political will exists among neighbourhood associations, this alternative has a higher likelihood of success if propelled by economic incentives on the part of industrialists, who will realize a lower marginal cost for reliable electricity if they increase the capacity of their generators to 100MW or greater (Interview 14, 23, 2006). Industrialists, especially garment factory owners, possess financial expertise and access to technical knowledge as many already have captive generating capacity for their own factories. Neighbourhood associations should collaborate with nearby industrialists to arrange the sale of electricity to their community.

In order to create the needed degree of trust between government and potential distributed generators, the Ministry should create a task force within the Power Cell to communicate to industrialists the policy framework and economic benefits of selling electricity to surrounding neighbourhoods. Since the Rural Electrification Board has a history of superior customer service and experience with small-scale, rural distribution, it is ideally placed to work with the Power Cell task force. An intergovernmental team may slow the policy design and implementation process, but it will display credible commitment to industrialists of the government's dedication to achieving distributed generation.

It is important the task force leaders personally meet with industrialists to establish a working relationship. Currently, many high-level bureaucrats do not think it is their job to approach industry, fostering mistrust of government by the private sector, (Interview 10, 2006). The task force could work together with the IPP department of the Power Development Board to determine and contact relevant industrial owners throughout the country.

The task force must also inform distribution agencies of the policy framework for distributed generation and facilitate cooperation. If local generators are to use existing government distribution lines, many technical issues arise such as matching frequency of electricity injected into the grid and coordinating load dispatch. The task force will also have to solve retailing issues: will the generator sell electricity directly to consumers or to the local distribution agency? The government should look to distributed generation schemes in other developing countries such as India and Nepal for examples of best practices and lessons learned, (Petrie, Willis & Takahashi, 2007). At first, generators should operate on a smaller scale (50 to 200MW) to account for limited infrastructure capacity.

The government must assure industrial generators that it will not meddle with agreements between generators and customers; therefore, the government can only pursue this policy alternative in tandem with the policy to strengthen BERC. If they have already invested in factories and/or electricity generation facilities, industrialists have already considered the physical risks of building infrastructure, such as the high degree of soil erosion and flooding in Bangladesh. However, manufacturers are currently loath to involve themselves with government anymore than necessary because of past incompetence and corruption (Interview 5, 2006). The government must overcome this bias by raising the profile and authority of BERC.

Although achieving distributed generation is a long-term goal, the caretaker government can display commitment to reform by starting the process. It must publicize its efforts, such as creating an intergovernmental task force and undertaking consultations with industrialists,

community groups and distribution agencies. Once distributed generation is underway, government control over operations will be greatly reduced. The caretaker government can prove its dedication to sector reform by allocating staff and funds from various departments to undertake the policy.

9 Conclusion

Since the soft military coup of January 2007, a policy window has opened in Bangladesh for reforms of the electricity sector. For the moment, many Bangladeshis believe change is possible. Already the interim government has demoted top officials in the sector known for their corrupt practices and re-opened contract negotiation with potential Independent Power Producers (IPPs). The interim government must continue to make bold reforms in the sector to maintain public support and be effective as possible during its time in power.

This study recommends two policies: strengthening of the Bangladesh Energy Regulatory Commission (BERC) and government-encouraged distributed generation. Since both policies have strong mechanisms for tackling corruption, their potential for successful implementation was dubious under the former government. In order to adopt these policies, the current, interim government needs to quell the fear of extrajudicial violence among reform-minded individuals in government and populace. It must also build confidence among potential distributed generators that it will honour their property rights. Face-to-face negotiations will demonstrate commitment to contract requirements and help to build the necessary level of trust to engage in business transactions.

I focus in this study on increasing electricity generation capacity in Bangladesh from the top-down. By leveraging the investment potential of the private sector, Bangladesh can most effectively increase the amount of electricity it produces and the quality of service to customers. In the longer term, policies should include mechanisms to ensure equitable access to this increase electricity supply, along with the wealth it will bring through increased firm investment and productivity.

Finally, this top-down approach attempts to address the entrenched corruption among elites in Bangladesh. According to former State Minister for Power, Anwarul Kabir Talukder, who was removed from his position in August 2006 for criticising corruption in the sector:

> The anti-corruption moves should be started from top levels. If the top persons of any organisation are honest, corruption would reduce by 80 percent. If all ministers of a government are corruption-free, secretaries and other bureaucrats will become free of corruption. ("Immediate Steps", 2007).

Appendixes

Appendix A: Interviews

I conducted elite interviews in Dhaka, Bangladesh from May to August 2006. Although many participants granted me permission to use their names, I have decided to keep all interviewees anonymous due to the volatile political situation in the country. The following table comprises a list of organizations –in no particular order- from which I drew my pool of interviewees:

Table 13 List of Interviewed Organisations

Sector	**Agency/ Organisation**
Public Sector	State Ministry for Energy and Power
	Bangladesh Energy Regulatory Committee (BERC)
	Rural Electrification Board
	Power Cell
	Bangladesh Power Development Board
	Infrastructure Investment Facilitation Center
	West Zone Power Distribution Co. Ltd.
	Power Grid Company of Bangladesh Ltd.
	Dhaka Electric Supply Co. Ltd. Gulshan.
	Dhaka Electric Supply Co. Ltd. Uttara.
Private Sector	Bangladeshi Energy Companies Association
	Summit Group of Companies
	Uttah Group of Companies
	Canada Bangladesh Chamber of Commerce & Industry
	Association of Diploma Engineers
	Central Committee of Uttara Wellness Commission
Academia	Bangladesh University of Engineering and Technology
Media	Energy and Power Magazine
Donor Agencies	USAID/NERUC Project
	Asian Development Bank

Seminars attended:

1. USAID/ SARI/ Ernst & Young Seminar, "Introduction to Electricity Markets", June 19, 2006.
2. Dhaka Chamber of Commerce and Industry Seminar, "Efficiency Improvement in Energy Consumption", July 10, 2006.
3. Power Cell/ Fitchtner Stakeholder Workshop, "Power Sector Financial Restructuring and Recovery Plan", July 27, 2006.

Excluded data:

Time constraints and several impromptu hartals (countrywide political protests) kept me from interviewing officials at the World Bank. I would also have liked to interview shopkeepers and household consumers of electricity to get their perspective on government mismanagement of the energy sector.

Interview Response Matrix:

Interview responses helped to define the policy problem, identify potential alternatives and establish criteria to assess each alternative. Responses are displayed in Table 15. Only responses relevant to alternatives and criteria are included in the table.

Table 14 Interview Response Matrix

	Need for Policy Option	Control of Corruption	Political Feasibility	Stakeholder Acceptance	Economic Efficiency	Ease of Implementation
1. IPP Guidelines	1) Bureaucracy doesn't think it's their job to approach industry, they're scared of the press (Interview 10) 2) According to DESCO, IPPs and CPPs can only sell energy to DESCO; it's DESCO's constitutional right (Interview 12) 3) Govnt. can ask IPP to re-tender but not force them (Interview 29)	1) Industry colludes with meter readers to cheat govnt. (Interview 3) 2) IPP take advantage of govnt. ignorance to get best deal for themselves, are not treated equally by govnt.: cronyism, nepotism, kickbacks etc (Interview 10) 3) Guidelines must clearly outline re-tendering circumstances because of Summit experience (Interview 23) 4) Cabinet has too much control of tendering process (Interview 23) 5) Too many differing IPP policies can be manipulated by both sides (Interview 23) 6) India and Chinese firms can bribe, Western firms can't (Interview 26)	1) Bureaucrats don't think they need to approach industry (Interview 10) 2) Debate over whether contracts should be negotiated in takas not USD (Interview 17) 3) Resentment from PDB and govnt. that see IPPs as competition and foreign companies as exploiters (Interview 20) 3) Tariffs need to take into account currency fluctuations etc. (Interview 21)	1) Trade unions in West Zone are strong and corrupt (Interview 10) 2) IPP are happy and ready to invest; the tariffs are flexible and lucrative (Interview 13) 3) Proper energy market is needed to promote investment; local capacity increases through private investment; fixed rates are not good (rates need to be negotiated) (Interview 14) 4) Investors need to mitigate risk (Interview 19) 5) REB and PDB are easier than GOVNT. to deal with (Interview 23) 6) There are 15 PPA between GOVNT. and Summit (Interview 23) 7) Policy delineating renegotiation of contracts is needed (Interview 28)	1) IPP's won't sell to end-users because it's not cost-effective (Interview 13) 2) IPPs should look to rates based on PBSs (Interview 21)	1) PDB has a pro-forma tariff (non-negotiated) which is the same contract for each generator, who fills in the specific info regarding operating costs etc (Interview 19) 2) Request for Proposal system means that there is no policy on unsolicited proposals. The process needs to be streamlined (Interview 22) 3) IPPs need 4 different agreements: they should be included in the guidelines (Interview 22)

	Need for Policy Option	Control of Corruption	Political Feasibility	Stakeholder Acceptance	Economic Efficiency	Ease of Implementation
2. Strengthening BERC		1) Investors need transparency and a level playing-field (Interview 8) 2) Public hearings will be held on captive licenses (Interview 18) 3) Upstream activities are not included in BERC mandate (Interview 18) 4) Upstream activities are not ready for regulation (Interview 26) 5) BERC can intervene in NEW IPP contracts not existing ones (Interview 26)	1) A donor controlled budget gives away too much control (Interview 32) 2) Top bureaucrats don't accept BERC as a watchdog organization (Interview 2) 3) DESCO officials controlled by DESA; take a long time approving documents and demand constant re-writes (Interview 10)	1) A donor controlled budget is offensive (Interview 1) 2) A proper energy market is needed to promote investment; local capacity increases through private investment; fixed rates are not efficient (need to be negotiated) (Interview 14) 3) BERC will have no role (Interview 28)		

3. Education Campaign

Need for Policy Option
1) Multiple explanation of market types and dispatch/monitoring center (Interview 3)
2) Distribution market needed to force single buyer to identify costs directly (Interview 9)
3) IPPs and CPPs can sell to private users, therefore the market is somewhere between a single buyer and open access model (Interview 9)
4) Bureaucracy doesn't think it's their job to approach industry; they're scared of the press (Interview 10)
5) Workers are lazy and inefficient. Policies need to provide them with incentives to work (long-term financial success) (Interview 10)

Control of Corruption
1) Understanding of rates reduces possibility for corruption (Interview 1)
2) DESCO's practices: pre-paid metering, bill collection, system loss decline, training center, should be shared with public and country (Interview 11 and 15)
3) Price breakdown on electricity bills should include generation, transmission and distribution charges (Interview 17)

Political Feasibility
1) Move from socialism to market economy has not been accepted by elites in the govnt. of Bangladesh (Interview 23)

Stakeholder Acceptance
1) Technology and regulation of demand side management are needed, not information campaigns (Interview 14)
2) Citizens don't understand costs that are specific to location (Interview 21)
3) The general public does not understand market practices (Interview 23)

Economic Efficiency
1) Market structures must include transparency in pricing and consistency in regulation and economic dispatch (Interview 7)
2) Govnt. entities need to realize the importance of upkeep and maintenance of infrastructure (Interview 29)

Ease of Implementation
1) According to DESCO, IPPs and CPPs can only sell energy to DESCO (Interview 12)
2) At the moment the PDB buys all energy but eventually IPPs will sell to distribution companies (Interview 12)

Need for Policy Option

1) Hooking up to the national grid could be problematic: switchgear, metering and protection devices are expensive and the govnt. owned equipment may not properly control intake from private generators (Interview 5)

Control of Corruption

1) Financial responsibility for neighbourhood grid reduces corrupt practices (Interview 1)
2) Pre-paid cards available to outmanoeuvre meter readers (Interview 1)
3) Necessary but difficult to get govnt. to honour Power Purchase Agreements (Interview 1)
4) Build lines and substations to cut govnt. out of the equation (Interview 23)
5) Loopholes in CPP will allow corrupt practices by govnt. and sellers Interview 2)
6) Minimum off-take guarantee is not necessary as demand by govnt. is so high that investor risk is minimal (Interview 2)
7) Meters will be jointly calibrated and sealed - Rahmatullah (Interview 4)
8) Guaranteed off-take is more suited to natural gas market as electricity can't be stored (Interview 7)
9) Efficiency improvements are needed such as customer to employee ratio (Interview 24)
10) Govnt.'s accountability increased with improved accounting practices, and overhauling equipment Interview 24 and 29)

Political Feasibility

1) Rates calculations are kept secret from public to maintain govnt. control (Interview 1)
2) According to DESCO, IPPs and CPPs are constitutionally bound to sell energy only to DESCO (Interview 11)
3) Govnt.. resistance to allowing IPPs to use distr and trans system, congestion and monitoring problems (Interview 20)

Stakeholder Acceptance

1) Hooking up to the national grid could be problematic: switchgear, metering and protection devices are expensive and the govnt. owned equipment may not properly control intake from private generators. (Interview 5)
2)Trade union presence in West Zone distribution is a problem (Interview 10)
3) Steel factories already sell energy to neighbours Tanvir (Interview 13)
5) Not attractive to sell electricity to govnt. because of nepotism (Interview 16)
6) There are 14 sectors in Uttara: a main sponsoring agency plus small business could raise the investment money for a power plant (Interview 27)
7) There is a large willingness to pay for better quality electricity in Bangladesh (Interview 1)
8) There is a low willingness to pay for better quality electricity in Bangladesh (Interview 27)

Economic Efficiency

1) Financial Responsibility through price signalling would increase efficiency (Interview 1)
2) Rate of 1.9 taka is not attractive to private generators. It covers operating costs but not maintenance costs (Interview 5)
3) Rate ceilings are not efficient. Market or cost based rates are more efficient (Interview 7)
4) Only +100MW generation facilities can be economically efficient (Interview 14)

Ease of Implementation

1) Uttara is non-agricultural, so residents aren't expecting cheap energy (Interview 31)
2) Govnt. distribution lines exist so excess energy can be sold back to govnt. (Interview 31)
3) Issues will be matching frequency to the national grid and maintaining safety regulations (Interview 2)
4) Govnt. estimates 500MW of captive power (Interview 14)
5) Potential problems include developing wheeling and wholesale charges, excess load taxing infrastructure, coordination of dispatch, flux of back-up generators, and geographic issues if buyers and sellers are not close together (Interview 2)
6) The grid can handle extra load because capacity exists but hasn't been utilized because of corruption – (Interview 4)
7) Hooking up to the national grid could be problematic: switchgear, metering and protection devices are expensive and the govnt. owned equipment may not properly control intake from private generators. (Interview 5)
8) There is a load dispatch center funded by ADB to be operational in 2008 (Interviews 12)
9) 13 PBSs have joined together to form Rural Power Company to sell to REB (Interview 21)

Appendix B: Scoring Method Example

I assess the ability of each alternative to achieve the overall criterion by examining it with respect to measures. I base my assessment on data provided in interviews and case studies. If the policy alternative has the potential to accomplish the measure, I give it a positive score (1), semi-positive score (0.5), or a zero score (0) if it cannot fulfil the measure. I then aggregate results and divide by the total number of measures for the criteria so that the different aspects of each policy can be organized and compared in a systematic manner.

For the criteria of control of corruption, I give it double weighting because corruption is such an intrinsic part of the electricity sector in Bangladesh and the main barrier to IPP investment.

Tables 15 and 16 give an example of my scoring method, counting pre- and post-January 2007 measures separately and then aggregating them for a total score. I use the IPP guidelines alternative and control of corruption criterion as the example.

Table 15 Example of Pre-January 2007 Scoring Measures: IPP Guidelines and Control of Corruption Criteria

Measures Used	**Score**
Balance accountability with efficient implementation	0.5
Balance devolution of authority with streamlined implementation	0.5
Strengthens independent oversight bodies	0.5
Increase informed public and stakeholder scrutiny	0.5
Ensures efficiency of IPPs	0.5
Reinforces competitive awarding process	0.5
Reduction of power theft	0
TOTAL:	3
Divided by total number of measures (7):	0.4

Table 16 Example of Scoring for Post-January 2007 Measures: IPP Guidelines and Control of Corruption Criteria

Additional Measures Used	**Score**
Persistence of reforms	0
Balance substantial yet feasible reform	0
Quick implementation with obvious results	0.5
SUB-TOTAL:	0.5
TOTAL with Pre-2007 Measures	3.5
Divided by total number of measures (7 + 3 = 10):	0.35
Corruption weighting (x2):	0.7

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