
# Integrity in Bangladesh's Rural Electrification

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# Executive Summary

Electric power distribution is important for economic development and governance and a frequent target of USAID intervention, but corruption frequently undermines its sustainability. USAID has therefore tried to analyze the causes of corruption and approaches to mitigate it. The approaches typically do not focus on corruption alone, but more generally on extending electric power to the world's people.

This case study examines several explanations as to why the Bangladesh Rural Electrification Program (BREP) has been able to maintain a high level of integrity in an environment where other power distribution networks have not.[1] Seven hypotheses are examined in this case study to help determine the factors that allow a power distribution system to act with an increased degree of integrity, as has been the case with the Bangladesh Rural Electrification Program (BREP), which operates under the direction of the Rural Electrification Board (REB) and 70 distribution cooperatives, *palli bidyut samiti* (PBSs). The hypotheses fall into two broad categories: (1) procedures and systems that secure collection and efficient electric power distribution; and (2) environmental factors that protect those procedures and systems from the political interference that could undermine their integrity.

The electric power distribution systems in Bangladesh are the Power Development Board (PDB), the Dhaka Electric Supply Authority (DESA), the DESA spin-off Dhaka Electric Supply Company (DESCO), and the rural electric distribution system presided over by REB.

USAID was the major external force assisting in the creation of BREP and has been one of its major supporters, especially through technical assistance contracts with the National Rural Electric Cooperatives Association of the United States.

System loss and efficiency in bill collection, reflecting power theft and noncollection of bills, are indicators of corruption. By these measures, BREP is indeed far less corrupt that PDB or DESA. During the 1986–90 period, PDB's total system loss was 37–41 percent. The BREP's has hovered at 15–16 percent.

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[1] This report focuses on "integrity," which is normally defined as the opposite of corruption. Such a definition is somewhat problematic. In the report we take the approach that, in most circumstances, corruption is not the absence of that integrity, but rather that corruption is a symptom of a system that lacks integrity. The importance of this approach was emphasized in our discussions with the wide variety of stakeholders in Bangladesh's Rural Electrification system with whom we met.

More precisely, the BREP has designed and documented clear systems and procedures for meter reading and dues collecting, disconnecting clients who do not pay their bills. The systems maintain their integrity through multiple cross-checks. If someone steals, the theft will immediately become apparent in the accounting and review systems. This is less true in other Bangladesh distribution systems, where inaccurate metering is pervasive and cross-checks and controls are lacking

The BREP systems and procedures have been protected by a number of environmental factors. First, the BREP has maintained its autonomy. A law prohibiting unions in rural electrification cooperatives has prevented well-connected unions from protecting corrupt staff and practices and from interfering with electricity distribution. Furthermore, the requirement that cooperatives' elected officers not be an office bearer of a political party has helped insulate the rural electrification cooperatives from partisan politics. Second, as a new establishment, the BREP did not inherit the traditions and habits of earlier, bureaucratic electric power distribution systems. Third, the BREP has a strong corporate culture of integrity instilled by training, tradition, and specific rituals. Fourth, the success of the rural electrification system has attracted the attention of donors, which carefully watch all decisions and developments and apply heavy pressure when corruption threatens to erupt. Finally, the capstone of the BREP, the REB has had a succession of strong, independent chairmen who, for the most part, have acted with integrity.

These factors, combined with a relatively sensible rate policy, have resulted in a more sustainable electric power distribution system in Bangladesh in regions served by BREP cooperatives.

These explanations of integrity are not applicable to every other country. Nevertheless, the importance of well-designed systems for administration and oversight and institutional autonomy connected with accountability for making a profit do have general applicability. Similarly, a need for autonomy from political pressures, enabled by cooperatization, privatization, or even corporatization seems evident. Good systems, incentives, transparency, and autonomy are always needed.

Beyond that the specific threats to system integrity differ from country to country and culture to culture. Thus, although in Bangladesh, banning trade unions and party politicians has been critical to ensuring the BREP's integrity, this may not be the case in other countries. And the role of donors is not one that can be paralleled in countries that are less aid-dependent. Furthermore, the threats posed by the generally higher level of corruption than in other countries—and the greater system tolerance for corruption and lack of general remedies—mean that the BREP had to overcome strong obstacles to integrity that may not be present elsewhere.

# Integrity in Bangladesh's Rural Electrification

## INTRODUCTION

Electric power distribution is important for economic development and a frequent target of USAID intervention, but corruption also undermines the sustainability of electric power provision. USAID has therefore tried to identify causes for corruption and approaches to mitigate it. The approaches typically do not focus on corruption alone, but more generally, on efficiently extending electric power to the world's people.

This study examines the Bangladesh Rural Electrification Program (BREP), which is heavily supported by USAID, and demonstrates that it operates a system of exceptional integrity, contrasting with electricity distribution systems both in other countries and elsewhere in Bangladesh, and examines the factors that could determine the BREP's integrity. This analysis also provides lessons learned for future donor interventions that may be undertaken in electric power distribution specifically and public utilities more generally.

Corruption in electricity distribution takes many forms—from large bribes to top officials in connection with procurement, to small bribes to low-level dues collectors; electric power distribution can potentially be a focus for both grand and administrative corruption. This study, however, is concerned only with administrative corruption, for which empirical data are more easily and publicly available.

This report provides comprehensive background material on corruption in electric power worldwide, general trends in corruption in Bangladesh, and a history of electric power distribution in Bangladesh. It also outlines the explanations for the integrity of the BREP and the methodology used to test them and presents conclusions and recommendations for Bangladesh and other countries.

## BACKGROUND

### Lack of Integrity in the Electric Power Sector Worldwide

The purpose of power sector reform is to ensure that electric power—generation, transmission, and distribution—is provided to customers efficiently and on a sustainable basis. Weak utility companies, including those for electric power distribution, translate into weak and expensive infrastructure, which significantly increases the cost of doing business. Shortages in electric

power therefore constrain economic growth; a lack of distribution often constrains rural and agricultural development.

The extension of power in rural areas is an object of public policy for most countries, but it has been constrained by massive leakages and corruption. In Bangladesh, which has made access to electric power a basic human right in its constitution, less than 5 percent of people had access to electric power when the constitution was ratified in 1972, and even today less than 40 percent do.[2]

In the Investment Climate Indicators in the *World Development Report 2005*, businesses in many countries identify a lack of reliable electric power as a major constraint. In Bangladesh, 73.2 percent of businessmen reported that power supply was a major constraint (only Nigerian businessmen graded their country more harshly), although losses from outages—5.2 percent of sales—are among the lowest levels of constraint reported. This implies that difficulties with power supply take different forms in different countries (World Bank 2004a, 247).

Many factors, including institutional capacity, inhibit electric power distribution, but corruption is very common. Ruth (2005) lists four entry points for corruption in an electric power distribution system: customer collection, fund diversion, improper purchasing, and manipulation of electric flows to favored customers. Employees of utility distribution networks often take bribes for not collecting dues from customers or for paying suppliers excessively. The distribution network then cannot pay for power, to say nothing of maintenance or investment.

Empirical evidence shows that corruption inhibits efficient electric power supply in many countries. For example, earlier studies have estimated that corruption in production, transmission, and distribution accounted for 15–30 percent of electricity sales in Ukraine, Moldova, Georgia, Armenia, Kazakhstan, Bulgaria, Romania, and Kyrgyzstan (Ruth 2005, 120). In India, 20–30 percent of "unmetered agricultural consumption" is taken by wealthy users such as shopping malls and high-income households (Lovei and McKechnie 2000).

According to Lampietti (2004),

> Losses of 10–15 percent, as observed in Hungary and Poland, are consistent with fully commercialized electricity utilities. Continuing corruption and theft and the use of outdated distribution equipment keep losses above the desired levels in the other countries. [i.e. Armenia, Georgia, Kazakhstan, and Moldova] … In Armenia losses fell by 40 percentage points from highs in the early 1990s.

Undoubtedly the improvement in Armenia was partly because of the well-reported USAID program of assistance to the power distribution system.[3] Losses in Georgia were still high. See Appendix C for Indian Experience.

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[2] This comes from an interview by Dr. Abul Barkat, although it is verified in published sources.

[3] The impact on corruption can be seen in Lampietti (2004) and in some nonpublic World Bank–sponsored studies. The USAID activities are described on the respective mission website.

## Lack of Integrity in Bangladesh

Bangladesh is reported to be one of the world's most corrupt countries. According to the 2005 *World Development Report* (World Bank 2004a), 58 percent of Bangladeshi businessmen surveyed say that corruption is a major constraint on their operations, about the same level as in China. Furthermore, 97.8 percent report that they pay bribes, although bribes as percentage of sales is not high—2.8 percent, compared to the 6–9 percent reported in many countries (World Bank 2004a, 247).

World Bank Institute data on governance show a dramatically accelerating trend in corruption in Bangladesh. The percentile rank of Bangladesh for controlling corruption declined from 43.2 in 1998 to 33.9 in 2000, 16.8 in 2002, and 10.3 in 2004.

## Electric Power Distribution in Bangladesh

### *Electric Power Market*

The electric power distribution systems in Bangladesh are the Power Development Board (PDB), the Dhaka Electric Supply Authority (DESA), the DESA spin-off Dhaka Electric Supply Company (DESCO), and the rural electric distribution system presided over by the Rural Electrification Board (REB).[4] Table 1 shows each system's share of the country's sales and customers.

Table 1
*Bangladeshi Electric Power Distribution System's Shares of Sales and Customers, June 2003 (Percent)*

| System | Electricity Sales | Customers |
|---|---|---|
| BREP | 35 | 66 |
| PDB | 35 | 24 |
| DESA | 25 | 7 |
| DESCO | 5 | 3 |

*SOURCE: Ministry of Power, Energy and Mineral Resources of Bangladesh*

The systems' shares of sales are fairly evenly distributed, but BREP has a much larger share of the customer base. REB reported 36 million individuals served (through more than 36 million connections), and 1,800 connections added every day.

REB oversees the Rural Power Corporation for power generation and serves 70 rural electrification cooperatives (*palli bidyut samiti*). The REB provides the cooperatives with technical support, negotiates the purchase of power for them, approves their tariffs, and supervises other functions. An extensive program is underway to transfer customers from PDB to the BREP in smaller towns and periurban areas.

[4] There have been some further splits in the last couple of years but we ignore them in what follows.

More general information on the status of the various Bangladesh distribution systems is available. USAID conducted a major program assessment in 2001, and there are a 2002 World Bank project appraisal document; three reports by the Centre for Policy Dialogue, a Bangladeshi think tank, in 2003, 2000, and 1999; Annual Reports from Transparency International Bangladesh affiliate from 1997-2001 and Household Surveys cited below from 2002 and 2005, and Abul Barkat's study for the Human Development Resource Centre (2002). Except for Transparency International's report, corruption is not the main focus of any of these reports, and much of the corruption information is anecdotal.

### *Donor Interventions in Power Distribution in Bangladesh*

USAID was the major external force assisting in creating the BREP. At first, beginning in 1978, USAID was the sole donor and has donated $210 million to the BREP over the years. The primary form of USAID intervention has been a succession of technical contracts with the National Rural Electrification Cooperative Association (NRECA) under which NRECA has been the prime source of technical assistance, particularly in management of power distribution to the BREP. Rural areas in Bangladesh did not have much electricity until the BREP came along. Today, the extent of rural electrification, like the provision of microfinance, is one of the areas in which Bangladesh leads, and is seen as an example. This technical assistance helped set up the operating principles, goals, organization, operating systems, and human resources on which the BREP is based.

Latter the World Bank and ADB and some other bilateral donors became the major donors to the BREP in dollar terms. But even then USAID has continued to underwrite the NRECA technical assistance.

## INTEGRITY IN ELECTRIC POWER DISTRIBUTION IN BANGLADESH

The BREP has a reputation for integrity, the other systems do not. PDB and DESCO are highly corrupt, while the BREP system supported by USAID has been relatively honest. An article in Bangladesh's leading financial newspaper, the *Financial Express,* of December 25, 2004 (based on a press release by the U.S. Embassy), reports:

> Most Bangladeshis view their rural electrification effort as one of the most significant development initiatives to date. The programme's success is due to a number of key elements. … A critical factor has also been the adoption of sound policies and procedures which monitor activities to ensure high performance levels … and curb potential corruption.

The World Bank, which had been providing extensive support to both REB and PDB, reported:

> The World Bank Group has had successful experience with the support provided … to the rural electrical cooperatives in Bangladesh over the last several years …The rural electricity cooperatives under the apex Rural Electrification Board (REB), continues to connect more that 500,000 new customers annually and assures them of reasonably good service under a relatively undistorted tariff framework." (World Bank 2004b)

The Asian Development Bank (ADB), which has been the largest overall contributor to funding power infrastructure in Bangladesh, completed a review of its sector assistance in December

2003. It reports that the ADB's focus has shifted from "generation to transmission and distribution, primarily in the urban areas since adequate assistance from other development partners was being directed to rural electrification" (ADB 2003a). It had suspended lending between 1989 and 1995 (along with other donors), because of disappointing relationships with the PDB and DESA. But ADB's renewed lending involved "engaging the government in a reform agenda through TAs, loan covenants, and extended policy dialogue, aimed at enabling sector unbundling and corporatization, greater private sector participation and reducing system losses and non-payment of bills in the key public utilities." Overall, as ADB indicates, for non-BREP electricity, "power supplies to consumers were generally unsatisfactory and the reputation of the system is poor." The ADB review continues to say that financial management of PDB and DESA is poor; they "still use manual billing for some operational areas which are inefficient and susceptible to theft." ADB accepts that change will be slow in these two organizations.

As outlined in the Methodology section below, system loss and efficiency in bill collection are indicators of corruption. System loss is divided into two categories, technical and nontechnical. Technical system loss depends on the physical state of the transmission equipment; experts suggest 9 percent would be an appropriate estimate for Bangladesh. The nontechnical portion of system loss corresponds to power theft through unauthorized connections, which are often protected through corruption. System loss of more than 9 percent can be attributed to power theft. The failure to collect fees owed (and to disconnect nonpaying customers) reflects corruption and inefficiency in meter reading and the billing process.

System loss for PDB and DESA has been historically high. During the 1986–90 period, PDB's total system loss was 37–41 percent. By the early 1990s, system loss had risen to about 42 percent, and an emergency plan was undertaken to lower it. By the mid-1990s, PDB had reduced system loss to about 35 percent, and has managed to lower it steadily since then, but PDB's system loss remains higher than that of the BREP. The BREP's excellent performance in terms of system loss takes place despite a rapid increase in the number of clients, including from the transfer of many clients from other systems, and a large and spread-out distribution network.[5] Table 2 shows the system and bill collection performance of the major power distribution systems for the past several years.

Table 2
*Total System Loss and Bill Collection Rate in Electricity Distribution Systems in Bangladesh, 1994–2005 (Percentage)*

| Year | System Loss | | | Bill Collection | | |
|---|---|---|---|---|---|---|
| | BREP | PDB | DESA | BREP | PDB | DESA |
| 1994 | 15.45 | 30.26 | 32.77 | 98.95 | 82.11 | 79.54 |
| 1995 | 15.74 | 29.42 | 31.71 | 95.72 | 90.17 | 89.45 |
| 1996 | 15.17 | 28.44 | 31.30 | 98.24 | 92.77 | 84.69 |
| 1997 | 15.82 | 27.59 | 29.55 | 95.17 | 87.98 | 81.91 |
| 1998 | 16.80 | 29.09 | 30.13 | 95.62 | 80.98 | 80.40 |
| 1999 | 18.81 | 29.69 | 29.89 | 93.88 | 70.69 | 76.15 |
| 2000 | 16.24 | 26.72 | 34.56 | 96.92 | 82.29 | 87.60 |
| 2001 | 18.08 | 24.93 | 36.55 | 96.00 | 86.00 | 87.61 |
| 2002 | 16.00 | 23.00 | NA | 09.00 | 89.00 | NA |
| 2003 | 17.35 | 23.00 | 31.00 | 97.90 | 89.00 | 92.00 |
| 2004 | 15.60 | NA | NA | 97.72 | NA | NA |
| 2005 | 15.67 | NA | NA | NA | NA | NA |

*Source: Asian Development Bank and REB.*

Corruption is also connected with the allocation of new connections and the theft of distribution equipment. These factors also differ among distribution systems. The survey of BREP clients transferred from other distribution systems conducted for this case study found that clients felt that there was less corruption in the BREP connected with allocation of connections and less theft. There were also fewer illegal connections. Among survey respondents, 88 percent reported they did not know of any illegal connections after their transfer to the BREP; two-thirds reported a decrease in the number of illegal connections that they knew about.

Transparency International Bangladesh released a household survey in April 2005 that reported that 10.4 percent of households with electrical connections in Bangladesh had illegal connections, which had been connected for an average period of 36 months. Seventy percent paid bribes averaging 1,174 taka (a little under $20) a year. And 4.3 percent had paid to have their meters tampered with.[6] A similar survey in 2002 showed slightly lower levels.[7]

Unfortunately, corruption, particularly related with new connections, has crept into the BREP network in recent years, although the level of corruption is still low. Incidents were reported in

[6] Corruption in Bangladesh: A Household Survey, Dhaka: Transparency International Bangladesh, April 20, 2005 at http:www.ti-bangladesh.org/documents/HouseholdSurvey200405-sum.pdf. Unfortunately, this is not disaggregated by distribution work.

[7] Pp. 7-9, Executive Summary, nethttp://www.ti-bangladesh.org/cgi-bin/cgiwrap/Wtiban/tibdocs-voview.cgi?../TIB-docs/Recent_documents/1058071197__exhhsurvey.pdf. There is disaggregation by urban/rural, with higher corruption in rural areas, but rural connections could come both from PDB and REB. Interestingly the average bribe figure is very close to that in the Abul Barkat survey cited above, though the precise terms and conditions differ.

the Barkat study (2002) as well as the study conducted by this survey team. But the major grievance regarding new connections is not corrupt payment for individual connections, but political pressure resulting in the allocation of lines to whole areas whose selection could not be justified on commercial grounds. This sort of misallocation is being addressed through a renewed focus on keeping to the Master Plan which governs system expansion into un-electrified areas, and to transparent policies in making new connections in others. Following the Master Plan and other transparent policies is expected to control the phenomena of out-of-turn allocation of new connections. The government of Bangladesh and donors recommended and accepted the policy of adherence to the Master Plan and the approach it involved in early 2005.

## Explanations for BREP's Greater Integrity

### *Explanations and Remedies for Corruption in the Electric Power Sector Worldwide*

Various factors can limit corruption in electrical power distribution. Ruth (2005, 123–124) lists some of them:

1. Governing competence and capacity
2. Intolerance of corruption
3. Independent and autonomous bodies
4. Donors' roles
5. Administrative streamlining and elimination of administrative barriers
6. Transparency and accountability
7. Information technology

All these factors are critical in explaining the electricity power distribution networks in Bangladesh and their performance as follows:

1. The BREP has developed tight administrative procedures and crosschecks which secure its competence and capacity.
2. In the BREP zero tolerance has been shown for corruption in distribution.
3. BREP's independence and autonomy have been protected even compared to the other distribution networks. There is now a program afoot to provide similar autonomy to other electric power distribution systems in Bangladesh.
4. Donors as we argue later have played a key role in preserving the BREP's integrity and autonomy.
5. While administrative streamlining and elimination of administrative barriers have not been a key theme with the BREP, attention to administrative detail has. In fact, while "streamlining and elimination of administrative barriers" are always good, how they relate to electric power distribution is complex – perhaps we might agree that administrative complexity and inefficiencies are always breeding grounds for corruption.
6. Transparency and accountability have been hallmarks of the BREP's administrative system.
7. The BREP does make sophisticated use of information technology but that is not a major reason for its success.

According to one writer on corruption in the energy sector, the following energy sector–specific measures can reduce corruption and they have been applied in Bangladesh:

- Improve the transparency of energy transactions and the accountability of those who control the transactions
- Make budgets transparent and accessible, institute clear accounting guidelines, and develop auditing systems to ensure that guidelines are followed
- Establish internal audit departments that represent corporate values (Spector 2005)

### *Explanations for the BREP's Integrity*

The explanations for the superior integrity of the BREP fall into two broad categories, the results of which provide the structure for the assessment of corruption in the BREP compared with corruption in other electricity distribution systems in Bangladesh.

The first category of explanations includes the development of administrative systems -- procedures and systems for dues collection and efficient distribution of electricity. Two explanations fall into this category:

1. The review and accounting systems in the BREP are designed in such a way that they significantly decrease the likelihood of corruption in the BREP; and
2. Incentives in the system reduce fraud and the failure to perform.

The second category of explanations includes environmental factors that protect the procedures and systems from political interference. Five explanations fall into this category:

1. the BREP has a high level of autonomy, which allows it to resist political forces
2. The new system adopted prevented the contamination of the BREP system with personnel accustomed to corrupt business practices in other electrification systems in Bangladesh
3. The REB has instilled a corporate culture in the entire BREP system that promotes integrity
4. Competition for donor funds reduces the tendency to corruption
5. Strong chairmen reduced the ability of corruption to exist within the BREP.

The explanations were drawn from two sources. First, the literature on corruption in electric power distribution cited elsewhere in this paper. Second, former REB chairmen and employees and donor representatives offered their own explanations, which were also tested.

## Methodology for Testing Explanations

Though many informants agree about the validity of these explanations, how one would test them is less clear. But in what follows we outline an approach.

### *Data*

Five kinds of data were used: three categories of hard figures and two anecdotal categories that provide further context and insight.

The first category is composed of data that permit a comparison of nontechnical losses and payment collection among Bangladeshi electric power distribution systems. These are cross-sectional—not historical.

Second, a natural experiment provided historical data: several hundred thousand clients have transferred from other systems to the BREP in the past several years. The changes in performance characteristics—nontechnical electric power losses and payment collection—permit conclusions to be drawn about the superiority of BREP techniques to prevent power loss and make collections.

The third category of hard figures comes from the Nathan Associates survey of 251 BREP clients (184 domestic households, 47 commercial entities, 19 industrial units, and 1 irrigation system) whose lines had recently been transferred from other distribution systems to the BREP (see Appendix B for a translation of the survey questionnaire used). Although the survey is small and limited to two *upazilas* (subdistricts) near Dhaka and therefore is not statistically generalizable, it corroborates the reasons found for BREP's significant success in limiting corrupt activities.

Anecdotal evidence is made up first of a literature review and evaluation of Bangladesh's rural electrification system by international donors and REB staff and officers past and present. The second kind of anecdotal evidence comes from personal interviews conducted with past and present staff and officers of the REB and donor representatives that give further insight and context about the techniques that make successful rural electrification possible in Bangladesh.

### *How the Data are Used*

These data can be used in different ways to test our explanations. Cross-sectionally, because the BREP, which exhibits a higher level of integrity and hence lower incidence of corruption, has more of the explanatory factors (good systems, systems autonomy) than the competing electric power distribution networks, we can deduce that it is these factors that explain its integrity. Thus we show that the BREP had the administrative systems, incentives, and autonomy that the other systems lacked; that the BREP had the strong leadership, donor attention, strong corporate culture (from its inception), and autonomy from politics that they lacked as well. Thus the hypothesized explanations applied to the BREP and not the other electric power distribution networks.

A strong case can be made for the superiority of the practices and orientation of the BREP over those of the PDB and DESA from the point of view of corruption. This case is based primarily on a comparison of the distribution networks.

The greater integrity of the BREP is all the more remarkable because it exists in a general context where corruption is reported to be pervasive. Thus the factor of an enabling context of integrity was not present. The BREP demonstrates that particular institutions can retain integrity in corrupt environments, though even the BREP's story shows that the task is not an easy one.

## CONCLUSIONS

This section examines evidence for the explanations of the BREP's integrity, when compared with other electric distribution systems in Bangladesh. The first set of explanations focused on procedures and systems in the BREP that have secured the collection and efficient distribution of

electricity. The second set of explanations focused on the environmental factors that protect these procedures and systems from political interference. Economic theorists, especially since Schumpeter, and recently Rajan and Zingales (2004) and John McMillan (2002), have emphasized the importance of the social and political environment that protects market and economic governance systems.

## Procedures and Systems

The long-term donor representatives[8] and REB staff and officials agreed that the BREP is more successful in combating corruption because it has in place systems and procedures that minimize corruption and maximize collections and because the political and social environment has enabled the BREP to protect its systems. Brigadier Ahmed, the first Chairman of the REB and Brigadier Malek, one of his successors, elaborated on these themes. The key functions in the rural electricity distribution system have been isolated from the factors that might lead to corruption, and BREP employees are provided with strong incentives to do their jobs properly.

This study focuses on five functions of electric power distribution companies' management systems: (1) meter reading and dues collecting, (2) disconnecting clients who do not pay their bills, (3) removing unauthorized connections to power lines, and (4) preventing the theft of lines, transformers, and other distribution equipment. The following paragraphs summarize the procedures used by the BREP to guard against corruption, and the appendix describes the procedures in detail.

### *Meter Reading and Dues Collection*

All BREP users are metered. Meter readers are carefully selected and trained before being listed on a master roll for contract employment by rural electrification cooperatives. Meter readers are employed on one-year contracts renewable for two years and then are barred from employment as BREP meter readers or by the same cooperative, although their training enables them to be employed by other rural electrification cooperatives. Furthermore, their work is sometimes cross-checked by bill deliverers. Meter readers are supposed to report any unusual observations they make on their route to their supervisor.

Billing assistants enter meter readers' reports into the billing system. Billing assistants are rotated at least once a year. The process is supervised by a billing supervisor. Billings are reportedly checked by an internal control system for unusual fluctuations. Payments are made to banks or the cooperatives' offices. Payments and bills are quickly reconciled by internal control systems.

Moreover, each cooperative is required to enter into a performance target agreement to meet specific technical, operational, and financial goals. A specified weighting factor is used to determine employees' overall performance achievement. Employees who have overall performance achievement of 115 or above, including system loss and accounts receivable, receive an incentive bonus of 15 percent of base bay. Employees with overall performance achievement of at least 110 but less than 115 receive an incentive bonus of 12 percent of base pay. At the other

[8] Kamaruzzaman of USAID, James Ford of NRECA and Raihan Elahi of the World Bank.

end, employees who have overall performance achievement of less than 35 are penalized 2 percent of base pay.

In the small survey of BREP customers transferred from other distribution systems conducted for this report, customers reported that 94.5 percent of meters were in working order and that they were much better than those provided by previous distribution systems. They also reported that they were checked and billed regularly, and the readers changed almost every three months instead of the more than two years with previous systems. One or two respondents complained that meter readers charged for fixing meters that had been tampered with, although this may be an authorized charge.

Both the meter reading function and other factors affecting system loss are systematically addressed by the BREP. Special measures are taken for transferred lines. In December 2003 the System Loss Directorate was created by REB to handle problems with transferred lines. A pilot program was launched to tackle high system loss, creating task forces in eight cooperatives. Task forces consist of cooperative officials, including the general manager. The pilot program was highly successful and has been extended to other rural electrification cooperatives. See Appendix D, Experience with Transferred Lines.

### *Disconnecting Clients*

Lines are disconnected if payment is not received within two months, or if payment is not made by the 31st day after it is due. The billing department of each cooperative prepares a list of disconnections for the general manager. Every day a team goes out to disconnect lines for nonpayment and look for illegal connections. Two magistrates have been assigned for the past seven months to support the BREP during disconnection, and this has reportedly facilitated the process.[9] The magistrates are moved to wherever collection problems are experienced. As of June 2005, total disconnections since inception totaled 787,697. More than 10 percent of all lines are disconnected in a given year.

Disconnected bills have a charge of 10 percent added for late payment if made within 30 days of the due date. In our survey, 43 of 251 surveyed transferees had experienced a cutoff. They were cut off an average of 47 days after nonpayment and paid an average of 372 taka for reconnection (perhaps their overdue bill). None had been cut off by their previous electric power distributor.

### *Removing Unauthorized Connections*

As a matter of policy during the transfer of lines to the BREP, pilferable lines are given the highest priority for technical upgrading. One hundred percent of meters are replaced and the lines are renovated to reduce technical loss. Rural electrification cooperatives regularly send teams to patrol electrified villages to prevent illegal use of electricity and the bypassing of meters. Motivational campaigns are also undertaken periodically to educate consumers about the adverse

[9] According to PDB data, 16 magistrate courts disconnected 2,290 illegal connections during the month of June 2004. Additionally, a total of 123 mobile court operations were conducted, realizing Tk 2,361,061 in fines;155 illegal users have been jailed; 1,315 were fined and 15 were jailed and fined. As of June 2004, 1,749 cases had been resolved and 65,793 were outstanding.

effects of electricity pilferage. A fine and a fee of 50 taka are levied for reconnecting an illegal connection even if the disconnected line is in the Master Plan. Long waits are often required because of Master Plan priorities.

### *Preventing the Theft of Distribution Equipment*

Theft of equipment primarily relates to transformers. When a transformer is stolen or destroyed, users who are served are charged 50 percent of its replacement cost. If the transformer is stolen a second time, these users are charged 100 percent of the cost. Customers are charged the current price of the replacement and have to pay the full amount before the line is reconnected. Thirty-three percent of customers report being billed for thefts under BREP. (Thirty-eight percent of respondents reported being charged for theft by their previous providers. This figure is hard to understand because PDB transformers are large and therefore are rarely stolen, unlike the BREP's, which are adapted to rural networks. Survey respondents probably were referring to the theft of meters.) Because of the punitive theft-replacement system, customers take an active role in helping prevent transformer loss.

## Exclusion of Political Parties

The requirement that cooperatives' elected officers not be involved in partisan politics has helped insulate the rural electrification cooperatives from general politics. This was a point that Brigadier Sabihuddin, the founding chairman of REB, insisted on, over considerable opposition at the time, and that now seems generally accepted. A focus on economic, commercial, and technical criteria for determining new connections further limits the scope for political intervention.

## Prohibition of Unions

A law prohibiting unions (although staff welfare organizations exist) in cooperatives such as the rural electrification cooperatives has made well-connected unions that have protected corrupt staff and practices in other systems impossible. According to Brigadier Malek, in an interview conducted for this study, when union organizing occurred,[10] rapid declines in performance occurred. The PDB and DESA, which are not cooperatives, have been dogged by unions protecting corrupt employees.

### *New Establishment*

As a new establishment, the BREP system did not inherit the traditions and habits of earlier bureaucratic electric power distribution systems. The first REB chief was selected and given high

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[10] According to Brigadier Malek, the first attempt to organize unions took place when Brigadier Sabihuddin was having a heart operation and there was a temporary power vacuum. The president of Bangladesh at the time, General Ershad, arranged to have the Rural Electrification ordinance amended to ban unions. In 1995 and 1996, during Brigadier Enam's tenure, a "welfare association" was registered with the Department of Social Welfare. When Brigadier Malek took over in 1997, the welfare association began agitating for things such as that all spare parts and repairs be handled by in-house staff. Brigadier Malek was "*gheraoed*" (blockaded at his desk) twice. He successfully resisted these efforts on the grounds of the ordinance. He transferred some employees, and 15 were arrested (of which 14 were eventually fired). Although the unionization effort had some political support, pressure was not applied directly to Brigadier Malek.

autonomy by President General Zia who had recently taken over in a military coup, this support was continued by his successor General Ershad. The chief was highly respected in the Army and only accepted the appointment with the assurances of autonomy. The plans for the BREP had been worked out in some detail with donors and some highly respected Bangladeshi civil servants such as SM Al-Hussainy. The role of the civil servants is clear from the early project documentation. Initial employees were hired straight out of university or high school, with a few exceptions for middle management, and none was hired from the PDB or other government departments. Middle managers were recruited without electricity experience, and senior managers were very carefully vetted.

At the same time, great care was taken to incorporate lessons learned from experience elsewhere, especially in the Philippines, especially the necessity of relying on written instructions and a creating a powerful central role for the REB instead of decentralizing power to the cooperatives. The time has come, however, according to Brigadier Sabihuddin, to update the instructions.

The first leaders created a system and instilled an ethic that has continued and is widely institutionalized in the organization.

### *Strong Institutional Culture*

The rural electrification cooperatives board of directors' pledge, which each director is required to sign, gives an indication of the strong BREP culture. The pledge is also included in the rural electrification cooperatives' policy manual. It pledges directors to justify the trust placed in them by REB and cooperative members by informing themselves about their responsibilities, BREP programs, the history of the rural electrification cooperatives, and the BREP's value to the community; comply with majority decisions, act for the good of all members, promote a democratic orientation and control of the rural electrification cooperatives by its members; share responsibility for policy and plans; provide for members' and the general public's education in BREP principles and the productive use of electric power; and enlist members' participation in good community relations.[11]

Training has been critical in instilling the corporate ethic. The REB Institute was carefully designed, and all employees, including directors, have to attend. For many years the institute had one director. Training focuses on general orientation to the BREP as well as technical matters; frequent refresher courses are required.

### *Donor Attention*

The success of the rural electrification system has attracted the attention of donors, which carefully watch all decisions and developments and apply heavy pressure when corruption threatens to erupt. The decision to publicize the Master Plan is an example. This point was asserted exclusively by donor spokesmen; however; almost all Bangladeshi respondents were doubtful of the effect of donor pressure on keeping corruption in the BREP low.

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[11] Of course such pledges are common— and commonly ignored—but the BREP seems to have had directors who took the pledge seriously.

### *Strong Chairmen*

Through interviews of senior long-time employees at REB, as well as interviews with donors, it is clear that strong chairmen have been a major contributing factor to the strong integrity of BREP. Given the nature of this hypothesis, anecdotal evidence is the only way in which to judge its validity. In particular, it appears that Brigadier Sabihuddin was the driving force behind the BREP, insisting on the aforementioned systems and procedures, following through on imposing consequences, and obtaining political cooperation when needed and resisting its pressures when BREP's integrity was in jeopardy.

## Summary of Conclusions

The BREP's accounting and review systems have been very important in preventing corruption. This system of accounting and reporting with multiple cross-checks ensures that meters are read accurately, bills sent promptly, disconnections handled promptly, unauthorized connections removed, equipment theft minimized, and dues remitted fully. And if someone steals, the theft will immediately become apparent in the accounting and review systems. This is less true in other Bangladesh distribution systems, where inaccurate metering is pervasive and cross-checks and controls are lacking. Usage is unrecorded, and bills are not made or collected.

It is not the accounting systems alone, however, but the way that the systems are buttressed by employees' incentives to report and remedy fraud and failure to perform—whether by other employees, clients, or banks—that makes corruption so rare in the BREP. Furthermore, a key aspect of the systems is that they are documented in publicly available, transparent instructions, and their workings are widely publicized. Training and retraining on the corporate culture—both principles and procedures—are also a vital factor in the BREP's success in inculcating integrity.

BREP's level of autonomy (made possible partially through USAID intervention) is also an important protection against corruption. The BREP has generally had independent professional leaders who have been able to ignore the demands for special favors and political accommodations that are a normal part of doing business in Bangladesh. This autonomy was also protected by the rural electrification cooperatives and their corporate culture, with its emphasis on commercial, economic, and technical considerations. The BREP's autonomy was further strengthened by the absence of unions. And finally, it was protected by the donors continually pressing for good governance. The autonomy of the system and its ability to preserve its systems have largely been respected as far as power distribution is concerned. Threats to the BREP's autonomy have concerned the allocation of new connections and have been addressed.

These factors, combined with a sensible tariff policy, have resulted in a more sustainable and higher-quality electric power distribution system.

## RECOMMENDATIONS

Obviously, the extent to which these explanations of integrity in the BREP are valid for Bangladesh are not simply applicable to every country. Nonetheless, the importance of well designed systems for administration and oversight and institutional autonomy connected with accountability for making a profit do have general applicability. Similarly a need for autonomy

from political pressures, enabled by cooperatization, privatization, or even corporatization seems self evident.

Beyond that the specific threats to system integrity differ from country to country and culture to culture. Thus the critical issue in Bangladesh of banning trade unions or party politicians, may not be such in other countries. The role of donors is not one that can be paralleled in countries who are less AID dependent. Furthermore, the threats that are posed by the generally higher level of corruption than in other countries – and the greater system tolerance for corruption and lack of general remedies mean that the BREP's integrity had to overcome some strong obstacles that may not be present elsewhere.

The specifics of encouraging integrity differ from country to country, but the following aspects of the BREP's experience can be said to be important for functions such as electric power distribution everywhere in the world:

- Good systems—Careful attention to detail in setting up metering, reporting, billing, and collection systems. These need to be specifically documented and checked.
  - — Systems redundancy for procedures. More than one check is needed of relevant data so that cheating will be discovered.
  - — Integration of these systems with incentives for employees and others. Employee and customer incentives need to be carefully calibrated to achieve the kind of performance required.
- Autonomy—Institutional autonomy (whether secured through privatization, cooperativization, or simply corporatization). The autonomy of the BREP has been secured through its being a cooperative, but elsewhere privatization or even corporatization has been sought. But as demonstrated by Bangladesh, institutional autonomy cannot be guaranteed by a corporate form, but requires political defense through having strong advocates and continuing vigilance. In Bangladesh's peculiar case, it was also enabled by the banning of unions.

Threats to good economic governance from corruption are different for different operations—generation, transmission, and distribution—and may vary even by geographical area. Therefore unbundling of different operations and decentralization as permitted by the cooperative structure are likely to lead to better governance and lower levels of corruption.

Systems also need to achieve economic sustainability—which does not exclude subsidies for public purposes, such as the extension of electricity to rural and less-developed areas—but subsidies need to be clearly demarcated and not become an excuse for inefficient management.

- Transparency—publicizing reporting processes so the broader public can protest if abuses occur. This is one reason for the separating generation and distribution into different corporations, so each operation can be held clearly accountable and be subject to different but appropriate governance. The existence of competing entities permits competition to be a check on corrupt practices.

- A corporate culture of integrity—In BREP's case this is connected with its being a cooperative based institution with a cooperative ideology. But the key to BREP's success in Bangladesh is its institutional culture and its instillation in all stakeholders.

Other details may or may not be specific to Bangladesh—the frequent transfer of meter readers and bill deliverers and the ban on unions, for example. Power distribution systems in other countries have achieved some level of integrity without these features.

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# Appendix A. Detailed REB Anticorruption Systems and Procedures

Meter readers are carefully selected and trained before being put on a master roll for contract employment by rural electrification cooperatives. Vacancies are advertised in newspapers, and candidates pass written and oral exams. Employees take an orientation program that includes hands-on training in reading meters, detecting broken seals, etc. Candidates must be high school graduates, familiar with arithmetic operations, competent to handle collections, and able to post a surety bond and a refundable cash security deposit, and have a bicycle. Preference is given to those in living in a service area. Meter readers must be knowledgeable, courteous, and responsive to cooperative members.

Meter readers are employed on one-year contracts renewable for two years and then are barred from employment either as meter readers or by the same cooperative, though their training enables their employment by other rural electrification cooperatives. Meter readers' contracts have a gap of at least 10 days between each contract. After three years with one cooperative, a meter reader may be employed in another. At least one-third of meter readers must be terminated each year. The rural electrification cooperative general manager has the authority to conclude the first two contracts, the third requires the consent of the board of directors. Women candidates can receive a two-year contract. The service area of each reader must be changed every six months.

Meter readers are supposed to report any unusual observations they make on their route to their supervisors. Meter readers' reports are entered by billing assistants into a system. Billing assistants' functions include preparation of electric bills from meter reading sheets, arranging bills for collection, adjusting bills requiring correction, preparing summaries of consumer billing in a prescribed format, and reconciling billing records with general ledger accounts.

If meter readers find irregularities they fill in a meter report form. Meter reports are left in the meter book when they are delivered to the Billing Section. Finance Department personnel under the supervision of the billing supervisor must prepare a meter report for suspected irregularities not reported by the meter reader. The Billing Section prepares a meter reports issued list and forwards it to the Construction, Operation, and Maintenance Department of the rural electrification cooperatives for investigation and follow-up. The billing supervisor prepares a meter report register and posts it daily so that all outstanding meter reports can be reviewed.

Meter readers' work is sometimes cross checked by bill deliverers, who deliver the monthly bills. The major functions of bill deliverers include delivery of electric bills to consumers and collection of bill statements from the bank branches that serve as collection points. Bill deliverers are supposed to assist the billing clerks in inspecting monthly electric bills. Cooperatives may introduce the practice of bill deliverers' cross-checking meters. The appointment term of bill deliverers is the same as that of meter readers.

Billing assistants are rotated at least once a year. The process is supervised by a billing supervisor. The billing supervisor is responsible for preparing a monthly bill processing schedule and assigning work to the various billing personnel. In the schedule are entered each meter book number in numeric sequence, the date the meters were read, and the name of the meter reader. Billing assistants enter the dates of bill preparation and the name of the responsible billing assistant. They also record the date the bills were posted to the consumer subsidiary ledger and the name of the posting billing assistant. The bill deliverer enters his or her name and the date of bill delivery. Finally, the schedule records the date consumers are placed on the disconnect-for-nonpayment list and the name of the billing assistant who prepared the list.

The number of bills and the kWh recorded on the electric bills must agree with the number of accounts read and the kWh posted on the meter book control sheet. After reconciliation, the bill is posted to the consumer subsidiary ledger.

All meter readings are recorded in a meter book. Each meter book has a control sheet in front that shows the book number, the date meters were read, the number of accounts in the book, the number billed, and the total kWh consumed each month by class of service. Meter readers are responsible for taking an accurate reading of the meter and ensuring that the serial number on the meter is the same as that in the meter reading report.

The general manager of each cooperative is required to set a date, either the first or last of each month, for reading their substation power meters in consultation with PDB, which supplies their power. They provide transportation to the PDB for this purpose. All meters of industrial and other large-scale consumers must be read within three days of the substation reading. Irrigation meters are supposed to be read no more than five days before the substation reading. Specific instructions require the general managers to provide adequate staff for this purpose. These readings enable a monitoring of systems losses. All new users have to be brought into the billing cycle as soon as possible, but within a maximum of 30 days. Besides the substation meters the cooperatives have to place meters at all feeder outgoings and at intermediate positions for long feeders.

Billings are checked by an internal control system for unusual fluctuations. Each rural electrification cooperative enters into an annual performance target agreement to meet specific technical, operational, and financial goals. A rural electrification cooperative is categorized into one of three groups for this purpose. Group I are mature rural electrification cooperatives with a minimum of 40 percent of equity based on their earnings in their net capitalization. Group II includes cooperatives that are either more than six years old or have reached the break-even report even earlier, and Group III includes cooperatives that have completed at least one year but not six years of commercial operation and have not yet broken even.

When targets are achieved (or missed), the cooperatives' employees, including meter readers, bill deliverers, and billing assistants, receive an incentive bonus (or penalty). A special formula determines the overall performance achievement of each rural electrification cooperative and thus employee incentives or penalties. For example, employees of Group I and II rural electrification cooperatives who have achieved 115 percent of their target get an incentive payment of 15 percent of their base pay. Those who achieve only 35 percent get a 2 percent penalty.

Money is paid to banks or the rural electrification cooperatives' offices. Each electric bill is payable at a rural electrification cooperatives designated scheduled bank branch or rural electrification cooperatives Zonal Officer, or Area Office and Complaint Centre. Additional collection centers may be established for consumer convenience provided they are in strategic locations, economically justifiable, and in close proximity to a scheduled bank or postal savings office where daily collections can be deposited. The guidelines state that collection centers will accept payment of bills during the same working hours as the rural electrification cooperatives headquarters offices. The additional collection centers are to remain open for a maximum of six working days in each month, the others every working day.

Payments and bills are quickly reconciled by internal control systems. Accounts are disconnected after two months of nonpayment, although they are can be disconnected on the 31st day after they are due. The Finance Department at the cooperative headquarters or at the zone level prepares the Disconnectible list (DNP). The Bill Processing Form, which is filled in monthly by the billing supervisor, has a column for DNP listing when the delinquent customer was put on the list and the name of the billing assistant who prepared the list. The disconnection team is dispatched promptly and given assignments that can realistically be carried out in a single day. The team is to note on the DNP list the action taken and return the lists to the Finance Department. If the customer wants to make payment at the time of disconnection, specified reconnection and disconnection fees and charges have to be paid along with the bill and late payment charge. For restoration of service after disconnection, these charges along with all unpaid bills have to be paid.

# Appendix B. Survey Questionnaire

Date:_____

# A COMPARATIVE STUDY ON RURAL ELECTRICITY

6. Name Surveyor: _____
7. Name Consumer: _____
8. a Upazilla:_____ b. Village:_____
9. What category does the consumer belong to:

a. Domestic Household ☐ **b.** Agriculture ☐

**c**. Industrial ☐ **d.** Commercial ☐

**e.** Other ☐ _____ (please fill in what other type)

| | Under REB | Under PDB |
|---|---|---|
| 10. If the answer in question 4 is **a**, how many members are/were there in the household unit? | _____ | _____ |
| 11. If the answer in question 4 is **b**, **c, d,** or **e**, how many employees are/were there in the unit? | _____ | _____ |

12. Have you been transferred from PDB to REB? Yes No
13. If you have been transferred, when was this done? ___/___/_____(dd/mm/yyyy)
14. How satisfied are you with the transfer? Please circle, where **5** is highly satisfied and **1** is highly dissatisfied. **1 2 3 4 5**

| | Under REB | Under PDB |
|---|---|---|
| 15. Do/did you have an electricity meter? (please circle) | YES/NO | YES/NO |
| 16. If yes, is the meter functioning properly? | YES/NO | |
| 17. If no to question 11, how long do you think it will take to be repaired? Please specify time in days. | _____days | |
| 18. Has/had the meter malfunctioned before? | YES/NO | YES/NO |
| 19. If yes to question 13, how many times does/did the meter malfunction on average per year? | __ times | __ times |
| 20. If yes to question 13, how long on average does/ did it take to be repaired? Please specify in days. | ___days | __ days |
| 21. Is/was your meter read on a regular basis? | YES/NO | YES/NO |
| 22. Is/was anyone else always present when your meter is/was read? | YES/NO | YES/NO |
| 23. If so, have/had you found any errors when your meter is/was read? | YES/NO | YES/NO |
| 24. How long has/had the same person been reading your meter? Please specify time in months. | _ months | __months |

| | Under REB | Under PDB |
|---|---|---|
| 25. In your experience, how often are/were the meter readers changed? Please specify time in months. | __months | __months |
| 26. How satisfied are/were you with the performance of the meter reader? Please circle with **1** being highly dissatisfied and **5** being highly satisfied. | **1 2 3 4 5** | **1 2 3 4 5** |
| 27. Have/had you ever seen the bill deliverer check your meter readings? | YES/NO | YES/NO |
| 28. What is/was your average monthly bill? Please specify in Taka. | __ Taka | _Taka |
| 29. Are/were your bills been delivered on time? Please circle, where **5** is always on time and **1** is never. | **1 2 3 4 5** | **1 2 3 4 5** |
| 30. How much time are/were you given to pay your bills? Please specify the time in days. | ___ days | ___days |
| 31. Please rate your level of satisfaction regarding the bill payment systems of REB and PDB, where 5 is highly satisfied and 1 is highly dissatisfied | **1 2 3 4 5** | **1 2 3 4 5** |
| 32. How many places can/could you pay your bills? Please specify a number for each of the options, and please specify other. | Bank branches_<br>REB office___<br>Other____ | Bank branches_<br>PDB office___<br>Other____ |
| 33. Where do/did you pay your bills? Please specify other. | Bank branches__<br>REB office___<br>Other____ | Bank branches__<br>REB office___<br>Other____ |
| 34. Do/did you always receive a receipt when paying? | YES/NO | YES/NO |
| 35. Do/did you incur additional fees when paying your bill? | YES/NO | YES/NO |
| 36. If yes to question 30, please specify the average amount in Taka. | ____Taka | ____Taka |
| 37. Have/had you received any overdue notices even after you paid your bills on time? | YES/NO | YES/NO |
| 38. If yes to question 32, have/had you made a formal complaint? | YES/NO | YES/NO |
| 39. If under REB, has the complaint been resolved? | YES/NO | |

| | Under REB | Under PDB |
|---|---|---|
| 40. If yes to question 34, how long did it take to resolve this? Please specify time in days. | _____days | ____days |
| 41. Has/had your connection ever been cut off? If the answer is no for both REB **and** PDB, please go to question 43. | YES/NO | YES/NO |
| 42. If yes to question 36, how many times has/had this occurred on average per year? Please specify number. | _____times | _____times |
| 43. If yes to question 36, did this happen because of (please specify reason). | **Nonpay-ment**<br>**Late payment**<br>**Other** | **Nonpay-ment**<br>**Late payment**<br>**Other** |
| 44. If disconnection was due to non payment, how many days after due date was your line disconnected? | _____days | _____days |
| 45. How many days did it take to reconnect the line after payment of bills? Please specify the time in days. | _____days | _____days |
| 46. What was the charge for reconnection? Please specify the charge in Taka. | _____Taka | ____Taka |
| 47. Was the charge in question 41 above the official charge for reconnection? | YES/NO | YES/NO |
| 48. If yes to question 42, please specify the amount in Taka. | ____Taka | ____Taka |
| 49. Are/were you aware of any illegal connections? | YES/NO | YES/NO |
| 50. If yes to question 44, how many illegal connections are/were you aware of? Please specify. | _____ | _____ |
| 51. How many illegal connections is REB aware of according to your knowledge? Please specify. | _____ | |
| 52. How many of these illegal connections has REB taken action against? Please specify. | _____ | |
| 53. How many days did it take REB to take action? Please specify in days. | _____days | |
| 54. If you use any of the following types of equipment please specify how many of each you use:<br>a. Fans _____<br>b. Light bulbs_____<br>c. Radio/cassette player_____<br>d. Television_____<br>e. Water pump_____<br>f. Fridge_____<br>g. Other (please specify)_____<br>h. Other (please specify)_____<br>i. Other (please specify)_____ | | |

| | Under REB | Under PDB |
|---|---|---|
| 55. How many of each type did you use when you were under PDB?<br>a. Fans_____<br>b. Light bulbs_____<br>c. Radio/cassette player_____<br>d. Television_____<br>e. Water pump_____<br>f. Fridge_____<br>g. Other (please specify)_____<br>h. Other (please specify)_____<br>i. Other (please specify)_____ | | |
| 56. Are/were you aware of any thefts of/damage to capital assets, like wires, transformers, etc. in your locality? | YES/NO | YES/NO |
| 57. If answer to question 51 is yes, have / had there been surcharges for theft of and/or damage to capital assets in your locality? | YES/NO | YES/NO |
| 58. If your answer to 52 is yes, have / had you been surcharged although someone else was responsible for the theft and/or damage? | YES/NO | YES/NO |
| 59. If answer to question 53 is yes, how much have you been surcharged for damage to/theft of which equipment? Please specify "Other":<br>Equipment: Surcharge for damage in Taka _____Surcharge for theft in Taka<br>a. Power Transformer _____ _____<br>b. Wires _____ _____<br>c. Other_____ _____ _____<br>d. Other_____ _____ _____<br>e. Other_____ _____ _____ | | |
| 60. Are you active in the Cooperative? | Yes/No | |
| 61. If answer to question 55 is yes, how active are you? (Please elaborate) | | |
| 62. Do you believe that activism in the cooperative affects performance of REB positively? | Yes/No | |
| 63. If answer to question 57 is yes, how do you think it does so? (Please elaborate) | | |

# Appendix C. Information on Electric Power Distribution Corruption in India

Power theft and related corruption are characteristic of many areas in South Asia. In Rajasthan, India, 80 percent of transmitted power is stolen. Five factors contribute to this rate of corruption. The first three—a backlog in connections, high cost for connections, and irregular supply—are connected with the corrupt behavior of utility employees and an "overall environment where cornering of public goods for private ends (especially by the powerful) is the norm." In circumstances, where power is short people try to grab it in whatever manner is available. Further, since you cannot get legal connections you make illegal one The theft phenomenon is apparently recent and enabled by the power shortages (Katiyar 2005).

> Utility employees have played a crucial role in promoting theft. This is true for most areas where knowledgeable observers will point out the role played by specific utility employees in institutionalizing a culture of theft. The utility employees, in fact, have created a virtue of the current breakdown of normal functioning by charging a commission for releasing transformers. The farmers who operate electric pump sets illegally pay a regular commission to the local line man.

The Rajasthan Electricity Regulatory Commission has pushed for metering connections to remove the backlog in connections, theft-proofing the lines, and increasing anticorruption vigilance activities. Katiyar emphasizes removing excess demand by clearing the connection backlog. He also recommends a "region-specific" policy.

The characteristic problems of electric power distribution systems have duplicated themselves throughout India (3iNetwork 2004).[12] Decision makers have slowly come to recognize that solving these problems is the key to their own energy crisis.

In India, some interest has been evinced in the Bangladesh REB experience, but such a model is said to be politically unfeasible in India (3iNetwork 2004, 64). Distribution cooperatives and similar intermediaries for rural electrification do elicit interest, however. But for the moment the focus in India is on enforcement actions—meter reading and the billing process. At the same

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[12] 3iNetwork provides very interesting case material on Delhi and Andhra Pradesh, though these are not rural networks.

time, the privatization of distribution and the promotion of competition therein have been attempted in certain states.

The India USAID Mission has also paid considerable attention to this sector.

> USAID's India Mission has recently decided to focus their reform efforts on energy distribution, in part because the generation and transmission subsectors will not be able to pay their bills until the service that the distribution sector provides is moved from a political to an economic good, based on market-driven principles, and with availability/reliability/quality issues resolved such that people will be willing to pay for the service. (CORE International 2002)

# Appendix D. Experience with Transferred Lines

When it takes over lines from PDB, REB's primary objective is to make sure that system loss and collection decline to REB averages. To bring system loss down, REB (1) replaces 100 percent of meters to REB meters; and (2) renovates lines rapidly to reduce technical loss.

To reach its 2 ½ year target to bring system loss down to REB average, REB offers incentives to employees:

64. In the first six months, the goal is to bring down system loss to 35 percent and improve collection rate to 80 percent. If these goals are met, employees are given a bonus.
65. Within 18 months of takeover, system loss would have to be reduced to 26 percent and collection would have to go up to 90 percent. If so, then bonus kicks in.
66. Within 2 ½ years, system loss would have to be 18 percent and collection would have to go up to 97 percent.

The handover of lines to REB from PDB has an immediate overall negative impact on system loss and operating margin, but over time, system loss and financial health of the rural electrification cooperative reverts to the REB average. Revenues increase accordingly.

Currently 29 rural electrification cooperatives are under a line-transfer program, with an average system loss of 15.86 percent and a bill collection rate of 98.06 percent in June 2005. The system loss and collection rates for the same rural electrification cooperatives were 22.36 percent and 92.15 percent, respectively, as of December 2004. These were primarily taken over from December 2002 and beyond. The four worst rural electrification cooperatives in terms of system loss are Laxmipur (26.1 percent), Moulovibazar (27.63 percent), Jamalpur (27.91 percent), and Meherpur (33.37 percent). However, with the exception of Jamalpur, the other three rural electrification cooperative line transfers took place about a year or so ago, and system loss is being brought down steadily, on schedule. In Jamalpur, cooperative officials are having problems because of resistance from locals who want to stay with PDB. The locals also set up their own line. Cases have been filed in the courts to prevent the handover to REB, further delaying the handover. Jamalpur had a system loss of around 60 percent in August 2004.

In December 2003, REB set up the System Loss Directorate to address system loss with respect to line transfers. A task force was established to tackle high system loss of eight rural electrification cooperatives on a pilot program. The task force members—cooperative officials, including general manager and REB officials—made field visits, oversaw system conversion, and

motivated customers to welcome the REB program, which was highly successful. This program continued bringing other rural electrification cooperatives under its aegis.