Final Report
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Power Cell
Power Division Ministry of Power,
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Power Sector Development Technical Assistance Project
IDA Credit# 3913-BD and Grant# H092-92)

Power Sector Financial Restructuring and Recovery Plan

FICHTNER

in association with

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Acronyms and Abbreviations

ADB	Asian Development Bank
ADP	Annual Development Program
AP	Accounts payable
APSC	Ashuganj Power Station Company
AR	Accounts receivable
BERC	Bangladesh Energy Regulatory Commission
BOO	Build Own Operate
BPDB	Bangladesh Power Development Board
BPI	British Power International (Consultants)
BST	Bulk supply tariff
CPP	Captive power plants
Cr	Credit
DESCO	Dhaka Electric Supply Company
DESA	Dhaka Electric Supply Authority
DSCR	Debt Service Coverage Ratio
DSL	Debt Service Liability
DSM	Demand Side Management
Dt	Debit
EAU	Energy Auditing Unit
EBIT	Earnings Before Interest and Tax
EGCB	Electricity Generation Company of Bangladesh
ERC	Energy Regulatory Commission
FY	Financial Year
GOB	Government of Bangladesh
GT	Gas Turbine
IDA	International Development Association
IPP	Independent Power Producers
IVVR	Identification, Verification, Valuation and Recording of Fixed Assets and Stores of BPDB
KfW	Kreditanstalt für Wiederaufbau (German Bank for Reconstruction)
LE	London Economics (Consultants)
MPEMR	Ministry of Power, Energy and Mineral Resources
OCGT	Open Cycle Gas Turbine
PBS	Palli Bidyut Samiti (Rural Electricity Cooperatives)
PC	Power Cell
PGCB	Power Grid Company of Bangladesh
PPA	Power Purchase Agreement
PTA	Performance Target Achievement
PSMP	Power Sector Master Plan
REB	Rural Electrification Board
ROA	Return on Assets
ROE	Return on Equity
RPC	Rural Power Company
SB	Single Buyer
SBU	Strategic Business Unit
SFR	Self financing ratio
SPP	Small power plants
TA	Technical Assistance
T&D	Transmission & Distribution
TK	Taka
TOR	Terms of Reference

TSA	Transmission Service Agreement
TUSA	Transmission Use of System Agreement
USAID	United States Agency for International Development
UWG	Utility Working Group
WB	World Bank
WZPDC	West Zone Power Distribution Company
NZPDC	North-West Zone Power Distribution Company

Project Synopsis

Title	:	Power Sector Financial Restructuring and Recovery Plan
Project Module	:	Component A.1 (a) (i) of IDA Power Sector Development Technical Assistance Project
Country	:	Bangladesh
Consultant	:	Fichtner GmbH & Co. KG, Germany
Duration	:	Approximately 8 months plus Post-hand-over support for six months
Objectives	:	The main objective is to develop a mechanism to forecast, restructure and monitor improvements in the financial performance of the power entities with specific focus on: • Prudent information flow and authentic accounting procedures, • Revenue enhancement (non-tariff): improvement of cash flows and collections, • Cost reduction (operational and technical), • Capital expenditure reduction as a result of revenue enhancement and cost reduction, • Debt restructuring, • Stakeholders consultations etc. A financial model will be required to develop to consider various scenarios based upon several performance parameters to assess investment requirements and financing options. A financial restructuring and dated recovery plan will be prepared for implementation. The work on financial restructuring would provide critical information to also design the overall restructuring plan of the sector that will be undertaken as a separate assignment of the project.
Activities	:	(1) Financial restructuring and recovery plan to restore creditworthiness while building the sector to meet the goals of universal coverage and high quality service in an efficient and sustainable manner. (2) Design of a financial model for the power sector to assess various financial restructuring scenarios. (3) Options for allocating assets, liabilities and operational functions to different companies in the context of unbundling the sector (4) Training / Transfer of Know-how
Deliverables	:	Inception Report Interim Report Draft Final Report Final Report Basic Financial Model including software Transfer of know-how to nominated persons Stakeholders' workshop Presentation of Final Report to Project Task Force Post-hand-over support for six months

1. Introduction

Bangladesh's power sector has long been characterized by low coverage, inadequate investment, and poor maintenance which resulted in low availability of state-owned power plants, high technical and commercial loss, serious transmission and distribution bottlenecks and equipment failures. Most of these problems were caused by a weak institutional framework, lack of commercial orientation, inefficient management, and poor planning, but exacerbated by the poor financial condition of the sector.

Sector entities have accumulated huge losses and high accounts receivables, and in consequence are unable to service debt and generate the resources for expansion and major maintenance. Direct subsidies to the sector through the Annual Development Program are used not only to finance capital investments, but also to service debt, mainly to multilateral banks and for supplier credits. The Government also guarantees performance obligations associated with power purchase agreements of independent power producers.

This dismal financial condition of the sector was a major driver for power sector reform. The ongoing reform is based on the program laid down in the Government's Vision and Policy Statement of 2000. Considerable progress has been made with sector unbundling; independent power producers were introduced, an energy regulatory commission created and sector entities corporatized. Reform efforts are already showing results: system losses have been reduced in most entities, collection ratios have increased, and overall operational efficiency has been improved. Nevertheless, improvements have been slow. The power sector is still dominated by public enterprises, and their poor financial condition remains a drain on public resources, undermines sound sector development and is a serious obstacle to economic growth.

In response to these challenges, the World Bank commissioned Fichtner in August 2005 with the preparation of a financial restructuring and recovery plan for the entire power sector of Bangladesh. The objective of this project is to define, in co-operation with the Ministry of Power, Energy and Mineral Resources and the sector entities, a realistic plan to restore the sector's financial viability and creditworthiness within a reasonable timeframe.

The structure of the Final Report is set up as follows:

- **Section 2 – Development of the power sector** describes the status and the policy framework governing the Bangladesh Power Sector. It identifies the emerging sector structure and discusses the ongoing process of the sector commercialization as well as the status of the technical and commercial interfaces between the existing and the emerging power sector entities.
- **Section 3 – Operational performance and financial situation of the existing sector entities** analyses the operational and financial performance of the existing power sector entities. The analysis is based on information received from the companies and on discussions held with representatives of the technical, planning, commercial and financial departments. The analysis is based on operational datan and financial data of the Financial Year (FY) 2004/05.
- **Section 4 – Financial Restructuring** analyses the existing proposals for financial restructuring and describes the financial restructuring measures proposed by the Consultant. The impact of the measures on the balance sheet of the existing sector entities and the Government budget is also identified. In

the next step, the restructured balance sheet of BPDB is unbundled into balance sheets for sector entities to be separated from BPDB.

- **Section 5 – Financial Recovery Plan** describes the key components of the financial recovery plan and the key conditions of success of the financial restructuring and recovery plan.
- **Section 6 – Financial Projections** describes the structure of the financial model as well as the key assumptions for the financial projections and analyses the results of the financial projections. The results include the development of the financial performance of the sector entities during the recovery period as well as the impact on the Government budget. Three tariff scenarios are developed for this purpose.
- **Section 7 – Time-bound Action Plan** describes the actions needed to ensure the implementation of the financial restructuring and recovery plan, as well as their sequence in time.

2. Development of the Power Sector

The power sector of Bangladesh is still dominated by public enterprises and the Ministry of Power, Energy and Mineral Resources (MPEMR) which is responsible for policy-making and regulation. The MPEMR oversees the sector operations and is involved in important decisions such as large procurement decision, tendering and selection of IP power stations, fuel policy, financing. Politically sensitive decisions such as tariff setting and restructuring are typically referred to the Cabinet of Ministers.

Power generation is still mostly in the hand of BPDB, although in the meantime six IPPs sell electricity to BPDB through long-term government-guaranteed Power Purchase Agreements (PPAs). The Ashuganj Power Station Company Limited (APSC) has been founded in 2003 and operates now as a private company under the company act. APSC is a wholly owned subsidiary of BPDB and is so far the only generation company that has been corporatized.

The transmission activity has been spun off from BPDB and DESA to PGCB. PGCB, founded in 1996, is now responsible for the dispatch and the operation and maintenance of most of the high voltage transmission grid (230kV and 132kV) in Bangladesh. The transfer of BPDB's transmission assets has been completed in 2003, whilst the asset transfer of DESA is still ongoing - the 132kV grid around Dhaka has yet to be transferred to PGCB. PGCB is also wholly owned subsidiary of BPDB.

The power distribution is split between several companies:

- Electricity supply in the Greater Dhaka area is undertaken by
  - DESA was formed as Authority by an Act of parliament in 1990 to take responsibility of supplying electricity within the greater Dhaka area. Several supply areas have been spun off from DESA and transferred to DESCO. DESA supplies today some 22% of end-use electricity sales in Bangladesh.
  - DESCO has been corporatized in 1996 as a wholly owned subsidiary of DESA. It started commercial operations in 1998 after the Mirpur service area had been handed over to DESCO. This was followed by the transfer of the Gulshan supply area in 2003. DESCO today accounts for 9.5% of the end-use electricity sales.
- Electricity supply in urban areas outside of Dhaka is covered by BPDB. Until recently this comprised four distribution areas, which in total represented 29% of the total end-use consumption.
- West Zone Power Distribution Company has been incorporated in 2003 and took over the electricity supply in the area of five towns around Khulna in April 2005. It will represent some 5% of the future end-use supply – hence reducing BPDB's market share to 24%.
- Electricity supply in rural areas is performed through 70 consumer co-operatives (PBSs) which are co-ordinated and monitored by the Rural Electrification Board (REB). The PBSs in the meantime cover a market share of 39.5% of the end-use electricity sales.

2.1 Sector Policy

The Electricity Act of 1910 is the primary legislation that still governs the Bangladesh power sector – however, since 1994 a number of policy statements have been issued and the Bangladesh Energy Regulatory Commission Act 2003 has been enacted.

2.1.1 Power Sector Restructuring Policy

The Vision Statement adopted formally in 1994 and the Policy Statement on Power Sector Reforms adopted in 2000 set the broad objectives for the power sector development whilst the Three-Year Roadmap for Power Sector Reform is the guiding instrument for the ongoing reform process.

2.1.1.1 The Vision and Policy Statements on the Power Sector Reform

The overarching objectives are:

- to provide electricity service to the whole country by the year 2020,
- to make the power sector financially viable and able to facilitate economic growth;
- to enhance the efficiency of the power sector;
- to improve the reliability and quality of electricity supply;
- to commercialize the sector;
- to usage of natural gas as the primary fuel for electricity generation;
- to explore the possibility for export of power and to diversify foreign exchange earnings;
- to increase private sector participation to mobilize financing;
- to promote competition among various entities; and
- to ensure reasonable and affordable price for electricity by pursuing least cost options.

The main components of the power sector reform program to achieve these objectives are:

- the segregation of power generation, transmission and distribution functions into separate services;
- corporatization and commercialization of the emerging power sector entities;
- creation of a Regulatory Commission;
- private sector participation in power generation and distribution;
- financial restructuring
- introduction of cost reflective tariffs for financial viability of the utilities and promoting efficient use of electricity;
- development of demand side management;
- development of alternative/renewable energy sources; and
- utilization of captive power potential through the introduction of an appropriate policy framework.

The specific reform measures proposed in the Policy Statement were as follows:

- Existing Power Generation:

    - separation of the existing generation units through a corporatized national power generation entity;
    - power stations under construction and new generation would be profit centers and could be incorporated as independent companies;
    - these two measures are considered to be the basis for expansion, enlargement and design of future reforms.
- New generation capacity may be based on least cost expansion planning and may be provided through a mix of public and private resources.
- Transmission: the transmission grid may be owned, operated, planned and developed by a corporatized entity in the public domain and expanded in tandem with the power generation.
- The initial electricity market may be based on a Single Buyer structure with the functions to purchase electricity from power generators and selling it to distribution companies, to establish IPP power stations, to undertake least cost expansion planning, and to operate the power system including economic dispatch. The Single Buyer shall be a public sector entity. Until the establishment of the Single Buyer BPDB will act in this role.
- Distribution has the highest priority on the reform agenda due to the high system losses and the bad financial and commercial performance. The distribution of BPDB and DESA may be transformed in a number of new corporatized entities and private capital and management participation may be sought. Electricity supply in the rural areas shall remain under the co-ordination and supervision of REB and performed by the PBSs.
- Tariffs shall be adjusted to reflect the cost of supply at an adequate level considering an improving level of efficiency. Tariffs for generation, transmission, distribution and supply shall be based on commercial principles.
- The power sector shall be restructured financially as to give the opportunity to start operation with a clean balance sheet.
- A regulatory commission shall be established to cover regulation of the electricity and the gas sector.

2.1.1.2 The Three-Year Roadmap for the Power Sector Reform

The implementation of the power sector reform is set out in the Three-Year Roadmap for the Power Sector Reform, which was updated in March 2005. It sets the time-bound action plan for the period between 2006 to 2008. The major milestones are the following:

- Conversion of BPDB into a holding company will be started in FY 2005/06 – achievement of full operation is targeted for FY 2007/08;
- The existing power generation stations are to be converted into profit centers for eventual conversion into separate corporate entities on an individual or on a cluster basis. Ownership of the corporatized entities shall be retained by a BPDB holding. The corporatization process has been completed for the Ashuganj Power Station Company. For the other existing power stations the corporatization process shall be completed in FY 2007/08. The corporatization will include
    - the completion of all commercial issues related to asset valuation and transfer;
    - the development of business and financial plans;

    - the completion of preparatory works regarding the transfer of employees to the corporatized entities;
    - the corporatization of the existing power stations (individually or on cluster basis);
    - the establishment of a commercial framework that allows the entities to operate on commercial basis;
    - the introduction of Performance Target Achievement (PTA) Schemes;
    - the enhancement of technical and managerial efficiencies and good corporate governance, the establishment of accountability and quality management; and
    - the improvement of human resource development.
- New generation will be established through a mix of private and public sources, whereby the employment of private sector resources shall be encouraged.
- Transmission will continue to be operated by PGCB as a system operator and wheeler of electricity. The development of business and financial plans shall be pursued as well as the establishment of PTAs. The demarcation between generation, transmission and distribution shall be finalized.
- The BPDB distribution shall be converted in a number of distribution companies – the BPDB Holding shall retain ownership. Up to date the distribution circles have been converted in Strategic Business Units (SBUs) which shall continue their function.
    - West Zone Distribution Company has been corporatized and started full commercial operation in April 2005 – commercial issues related to the transfer of employees need to be resolved in FY 2005/06;
    - Preparatory Works for the corporatization of South Zone Distribution Company shall start in 2006 and South Zone Distribution Company shall start and shall become fully operational in 2007 respectively;
    - North Zone Distribution Company and Central Zone Distribution Company shall become fully operational by the end of 2007;
- Corporatization of DESA will start in 2005/06 and full commercial operation is to be completed in 2007/08.
- DESCO shall continue its commercial operation and improve its performance.
- BPDB shall continue to operate as the Single Buyer – the establishment of a multiple buyer / seller market is not envisaged as long as the market has not reached a mature and stable condition. The establishment of a Single Buyer as an independent entity shall be achieved in the FY 2007/08.
- The Regulatory Commission has been enacted under the Bangladesh Energy Regulatory Commission Act of March 2003. It is supposed to be fully functional in June 2006, which will include the appointment of all the members and the staff and the issuance of a tariff order, however, at the time of writing this report these objectives have not yet been fully achieved.

2.1.2 Private Power Policy

The Government of Bangladesh has recognized that the future demand in power generation sector cannot be covered through public sector resources or through funding from donor agencies hence adopted the policy framework to attract private sector investment on a BOO basis.

Consequently the Private Sector Power Generation Policy of Bangladesh was released in October 1996 and revised in November 2004 to include the link to the Small Power Policy. It establishes the modalities for the implementation of private power projects. Power Cell has been nominated to facilitate all stages of the promotion, development, implementation and operation of IPP projects. It shall solicit and evaluate the proposals, negotiate and award the contracts and finalize the various agreements related to the projects.

The Private Power Policy sets a clear framework with respect to

- the responsibility for solicitation of the proposals;
- the security package including model Implementation Agreements, Power Purchase Agreements and Fuel Supply Agreements (if fuel is supplied by the public sector);
- the financing arrangements (non-recourse financing, minimum equity requirement etc);
- the contractual security against Force Majeure risks and protection against certain changes in law;
- the tariff structuring - payment components are prescribed as Capacity Payment and Energy Payment for large power plants – for small power plants up to 30MW capacity a levelized tariff in TK/kWh will be allowed; and
- the fiscal and other incentives for the private power companies.

Up to date in total six IPPs have been established in Bangladesh with a total installed capacity of 1,260 MW. The last IPP plant started commercial operation in the FY 2002/03 (AES Meghnaghat 450 MW combined cycle). Since then no further IPP project was tendered anymore. it seems that the Government of Bangladesh has abandoned the current IPP model toward one that is based on joint ventures between private investors and BPDB.

2.1.3 Small Power Policy

The Government of Bangladesh released the “Policy Guidelines for Small Power Plants (SPP) in the Private Sector” with the objective to allow private sector investors to establish small power plants (SPPs) on a fast track basis.

The guidelines allow private investors to establish power plants for generation of electricity for own use and sale of surplus energy to other users under BOO schemes. The size of the power plants is mentioned to be in the order of 10 MW, but the guidelines indicate that larger plants may also be permitted by the government. The Private Power Policy indicates that small power plants may have a capacity of up to 30 MW. The guidelines do not prescribe the type of plant and the location – both will be selected by the private sponsor.

The Small Power Policy envisages that the sponsor will be responsible to find customers for the electricity generated in its SPP and enter into direct contracts with them. To deliver electricity from the plant to the customers the sponsor might provide for own connections or use the existing transmission and distribution systems if adequate capacity is available. For the use of the transmission and distribution system for wheeling electricity to consumers the sponsor will have to pay a wheeling charge to the network owner. The wheeling charge and the terms and condition of wheeling will be mutually agreed between the sponsor and the network owner.

The Small Power Policy seems to have two segregate objectives:

- to support electrification in areas with no electricity supply at all. In this case the SPP would be allowed to act as an “integrated utility” supplying the electricity through its own network to end-use customers under negotiated tariffs – no regulated tariffs will apply; and
- to add generation capacity to the existing network in areas which are already supplied through distribution companies (DESA, DESCO, BPDB or REB), in which case the tariffs for the sales of electricity to end-use customers will be identical to the regulated tariffs of the distribution company. This would require the introduction of an open access regime to allow the SPPs to deliver electricity through the existing distribution network.

In the second case the most likely scenario is that the electricity is sold to either large-scale customers and/or to the distribution companies themselves. In the case that that electricity is only sold to distribution companies it would be worthwhile to define a standard form of Power Purchase Agreement including a tariff mechanism to be determined by the Electricity Regulatory Commission.

Presently there are three SPPs established with an installed capacity of in total 90 MW. They are delivering electricity directly to PBSs in the surroundings of Dhaka.

2.1.4 Captive Power Policy

The Captive Power Policy is presently under development. The primary objective of this policy is to bridge the supply – demand gap in the Bangladesh power sector especially at the peak time. Additional objectives are to

- provide for economic and efficient use of installed capacity;
- use economies of scale and capacity addition in the industry sector;
- create an enabling environment for competition in the electricity market;
- to use captive power to improve technical parameters such as frequency, voltage and reliability in the grid.

Under present circumstances the framework allows only for the sales of electricity directly to the Single Buyer or to a distribution company. Although the BERC Act 2003 (see below) does not prohibit sales of power by an end-use customer a clear and non-discriminatory “open access policy” is not yet in existence which might be required to enable the large scale supply of electricity from captive power plants (CPPs) to other utilities and to enhance competition.

2.1.5 Regulatory Commission and the Energy Regulatory Commission Act

The basis for the establishment of the Bangladesh Energy Regulatory Commission (BERC) is the Bangladesh Energy Regulatory Commission Act 2003. The BERC Act merges the legislation proposed for the power and gas sector reforms and hence forms the most important piece of legislation in that respect.

The BERC Act sets out the functions and powers of the BERC. Amongst others these are:

- to determine license conditions and to issue, cancel and amend such licenses;
- to ensure efficient use of energy and quality of the services provided;
- to determine tariffs;

- to approve investment programs of licenses under consideration of their financial status;
- to collect, maintain, review and publish energy statistics;
- to develop uniform accounting methods for all licenses;
- to promote competition;
- to resolve disputes between the licenses; and
- to ensure control of environmental standards.

The Act determines the relationship between the Government and BERC in its Chapter 5 stating that the government has the power to give directives for the development and overall planning of the energy sector and that the Government shall have the right to issue any policy directive in consultation with the BERC. The Act specifically mentions that the Government shall make policies with respect to the scope of planning and coordination for the sake of the development of the power sector.

The two most important duties of BERC are related to licensing and tariff setting.

- **Licensing:** Licenses in the power sector are required for power generation, transmission, distribution, metering and supply. BERC is responsible for the determination of the license conditions, the issuance, renewal, revision and revocation of such licenses. A separate regulation shall be set up for the processes related to the licensing. Templates for the licenses are under preparation.
- **Tariff Setting:** Tariffs shall be set in accordance with the policy and methodology prepared by BERC and in consultation with the Government at all levels of the power supply chain: power generation in wholesale, bulk and retail, transmission, distribution and supply of energy at the end-user level. The tariff methodology is to be developed by the BERC. Tariff determination requires hearing to licenses and others who have interest (which is interpreted as to the requirement for public hearings – regulations for such hearings need to be prepared). Tariffs shall not be revised more than once in a fiscal year, unless there are changes in the energy prices.

The BERC was enforced on 27 April 2004. At the beginning of 2006 still only two members have been appointed out of the statutory prescribed five members – the statute for decisions by BERC requires a minimum of three members. The commission is constrained in respect to the financial and human resources which can have an adverse effect on the financial restructuring and recovery of the power sector entities.

According to the Three-Year Roadmap BERC shall be fully functional by June 2006 including appointment of the chairman, all members and staff. It is expected that the tariff order will be issued by then. Other codes, standards, templates of licenses and regulations have been prepared with assistance of ADB and US AID.

2.1.6 Tariff Issues

2.1.6.1 Current Tariff Policy

Up to now tariffs have been set by the Government by tariff order. The latest tariff adjustment has been established in 01 September 2003. Together with the tariff order, a set of principles was released with the objective to begin codifying the process and principles of tariff adjustment and to phase out prevailing distortions in tariff structure:

- The average end-user electricity tariff for each customer class will be set to fully cover reasonable costs of supplying electricity to that customer class (including cost of generation, system services, transmission, and distribution), and generate a surplus to expand coverage and supply, and improve the quality of service.
- May the Government decide to subsidize the capital or operating costs to serve certain customer classes, it may do so directly from the budget.
- Tariffs will incorporate incentives to improve technical and commercial efficiency and generation costs will be "passed through" to end-user tariffs.
- Tariffs will be reviewed at least quarterly and adjusted annually to reflect changes in fuel prices, generation mix, exchange rates and inflation. May the quarterly review indicate a variation in the recognized costs in excess of 10%, the tariffs would be adjusted at that time.
- Differentiated rates will be maintained for peak and off-peak consumption, and a two-part tariff introduced for BPDB's generation plants, with one part covering fixed (capacity) costs and the second part covering variable (energy) costs.

The following describes our observation on the tariff system in the Bangladesh power sector to date, and the major issues that need to be resoved within the future tariff policy, the tariff methodology and tariff setting.

Low end-user tariffs
The present average tariff level for billed consumption is at TK 3.45/kWh in the BPDB supply-areas (DESCO TK 3.56/kWh and DESA TK 3.38/kWh). At this level, the revenues from electricity sales are not sufficient to cover the costs of supply – see Section 6.3.

Distorted end-user tariffs
The tariff structure for end customers is distorted with high cross-subsidies from commercial consumers to residential consumers. Presently residential consumers enjoy a life-line tariff with three blocks as shown in Table 2-1:

	TK /kWh	UScts/kWh
up to 100 kWh	2.50	3.79
between 101 kWh and 400 kWh	3.00	4.55
above 4001 kWh	5.00	7.58

Table 2-1: Lifeline tariff for residential customers (1US$ = 66 TK)

It is obvious that not only the first step of the lifeline tariff is subsidized to support low-income consumers[1], but significant subsidies flow into the second the segment of the life line tariff. In total the average tariff for residential customers is at TK 2.87/kWh (or UScts 4.35/kWh) which relates to an average consumption per residential customer of some 400 kWh per month. This is significantly below the average cost of service of the whole distribution segment and certainly not cost recovering for the residential sector.

Subsidies are provided from the commercial and industrial sector. Their tariff rates averaged some

- TK 3.84/kWh (UScts 5.82/kWh) for small industries;
- TK 5.30/kWh (UScts 8.02/kWh) for commercial customers; and
- TK 3.59/kWh (UScts 5.44/kWh) for medium voltage customers.

Cross-subsidies through commercial and industrial consumers affect the competitiveness of local industries and products in international markets which is further affected by the unreliability of the electricity supply and the need to maintain back-up generators.

Low and Distorted Bulk Supply Tariffs
The increasing cost of energy for power generation as well as the devaluation of the Taka and high local inflation have increased BPDB's own generation cost as well as the cost of electricity purchase from the IPPs. The bulk supply rates are not cost recovering from the viewpoint of a single buyer/seller entity, see as well Section 3.1.2.

Whilst IPPs are able to pass through the cost increases, BPDB as the buyer of the electricity has no means of passing these costs on to the distribution companies and/or eligible consumers.

Bulk supply tariff are not only too low and too inflexible, they are also distorted. The PBS's purchase power from BPDB at a 5.4% lower rate than other distribution companies (DESCO and WZPDC). In total the PBS were subsidized with some TK 710 million in the Financial Year 2004/05.

Uniform end-user tariffs across Bangladesh
The final customer tariffs are uniform across the country with the exception of the PBSs who operate under their own, specific tariff system. However, distribution cost and average revenues can differ significantly between rural and urban areas, e.g. DESCO's average billing rate is at TK 3.558/kWh whilst the average billing rate in BPDB's central zone is at TK 3.369/kWh, which makes a difference of some 5%. This means, that the distribution companies with a high load density may have advantages compared to those in areas with a lower load density and a different customer mix (less industrial and commercial consumers, higher portion of low income residential customers).

With uniform tariffs across the country some distribution companies will achieve higher profits and returns on net fixed assets while others may struggle to achieve their commercial targets under the given circumstances.

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[1]) The subsidy effect of the low tariff rate is seriously hampered by the fact that a minimum charge of TK 100/month is levied from this consumer group – the break even is achieved at a consumption of 36 kWh per month

2.1.6.2 Tariff Methodology

BERC is about to develop a tariff methodology. At the time of report writing, the tariff methodology was not made available to us; we only received the "Draft Electricity Generation Tariff Methodology" ("Generation Tariff Methodology") included in its draft of the Electric Generation Tariff Regulation, 2005.

The Generation Tariff Methodology describes in brief a mathematical algorithm for the generation tariff calculation comprising:

- the Fuel Cost Recovery Rate which shall be based on the actual fuel expense for electricity generation; and
- the Allowed Total Cost Recovery Rate to be based on the Allowed Total Cost.

The definition of the Allowed Total Cost is the sum of

- the allowed operation and maintenance expenses,
- the depreciation on the fixed assets;
- the return on the "rate base" comprising
  - net fixed assets in service;
  - work in progress (or works under construction); and
  - the working capital allowance (cash working capital + inventory of material and supplies – customer deposits)

  multiplied by the total rate of return calculated as the weighted average cost of capital (equity + long and short term debt).

The Generation Tariff Methodology does not comprise any further indication on the details what operation and maintenance cost would be considered as "allowable" and what rate of return on equity would be acceptable to the regulatory commission. We assume that further details on the Generation Tariff Methodology will be elaborated by BERC in the context of tariff applications filed from the various new sector entities.

2.2 The Emerging Structure of the Power Market

2.2.1 Market Structure and Sector Entities

The financial restructuring and recovery plan will be elaborated in-line with the power sector restructuring policy of the Government of Bangladesh set out in the 3-Year Roadmap and the Policy Statement on Power Sector Reforms. The following market participants will be considered:

- the existing BPDB Power Stations will eventually converted into corporatized entities individually or on a cluster basis – a definitive decision on the future structure of the generation segment has not yet been taken;
- IPPs that have been established up to now and will perform their services under the existing Power Purchase Agreements;
- new generation will be added to the system on the basis of public and private ownership;

- transmission services and technical dispatch have already been spun off BPDB and were transferred to PGCB – the take-over of the transmission assets from DESA is still ongoing;
- distribution and retail functions will be bundled in six separate distribution companies (DESA, DESCO, WZPDC, SZPDC, NWZPDC and CZPDC); and
- BPDB will be transformed into a holding company for all publicly owned sector entities.

The single-buyer market has been nominated as the preliminary market structure of the Bangladesh Power Sector. It forms a good basis to move towards increasingly competitive forms when the power market has matured. At present the policy statements indicate that the Single Buyer will procure all electricity generated and sell it on to the distribution/retail companies. However, this seems to be an initial structure. As mentioned above, the Small Power Policy and the Captive Power Policy imply that SPPs and CPPs will be able to sell electricity directly to end-use consumers and/or distribution/retail companies. Although the framework in terms of an open access regime is not yet readily in place, this will provide the first step for additional competition in the power sector.

The envisaged structure of the Bangladesh power sector is depicted in Figure 2-1. In general the single buyer model has advantages:

- single buyer markets have been established successfully under a number of jurisdictions and have served as a starting point for the transition of power markets to increased competitive market forms;
- the competition at the generation procurement will positively impact on the cost of generation;
- the simple structure of the single buyer market results in low transaction cost; and
- the Single Buyer can serve as single point for administration of the market and hence take the role of a market operator.

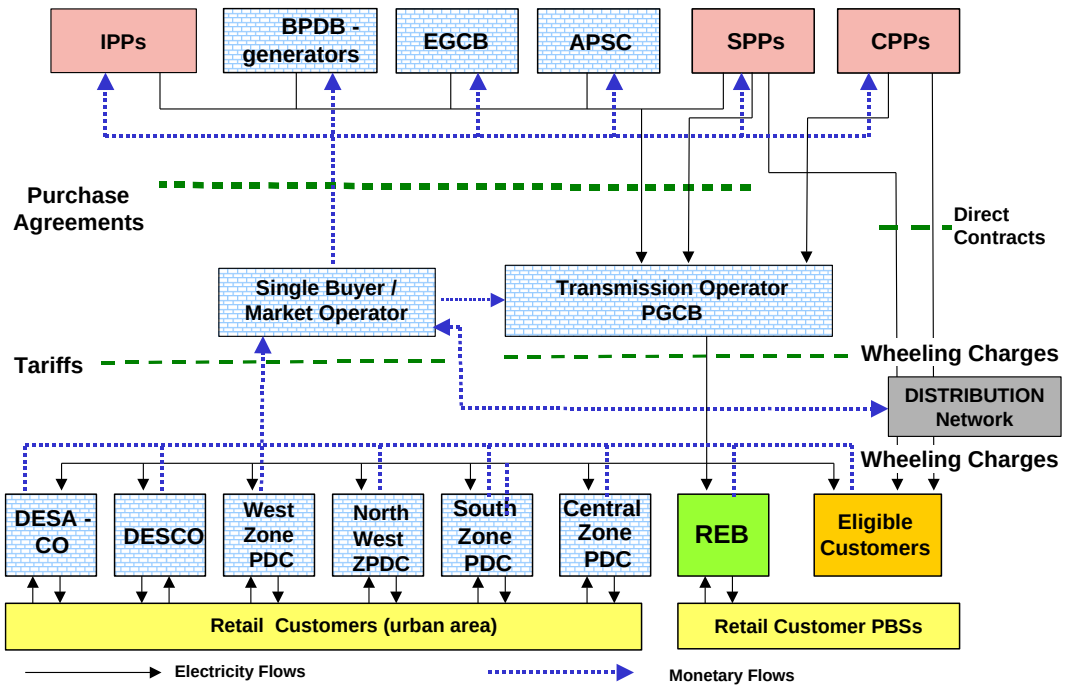

Figure 2-1: Envisaged Structure of the Bangladesh Power Market

On the other hand there are some disadvantages of the single buyer model. The primary disadvantage is related to the fact that the investment risk is loaded to the customers when generators work under long-term PPAs. In case that generation capacity is no longer required due to diminished load growth or advance of technology, the fixed cost of the plant are still passed through to the consumers via the long term PPA. There is no market signal to the generator to improve performance and efficiency on a continuous basis.

2.2.2 Commercialization of the Power Market

In a single-buyer market the commercial arrangements among the market participants are documented in a number of agreements that define each entity's functions and responsibilities and define clearly their roles in the operation of the single buyer market. The following legal instruments are required in order to complete the transition to the single buyer market in Bangladesh:

- Power Purchase Agreements between the Single Buyer and the generators;
- Power Purchase Agreements between the Single Buyer and Small Power Producers and Captive Power Producers;
- Bulk Supply Agreements between the Single Buyer and the distribution companies;
- Transmission Service Agreements between the Transmission Company (PGCB) and the Single Buyer;
- Transmission Use of System Agreement between the Single Buyer and the user of the transmission system;
- Transmission Connection Agreement between the Transmission Company and the connected entity (generation, distribution, eligible customer).

The following section discusses the status of the technical and commercial interfaces within the sector.

2.2.2.1 Technical Interfaces / Metering Arrangements

In unbundled electricity market the borders of ownership of the incorporated entities may be congruent with the point of metering. This makes sense because the electricity is handed over at the borders of ownership to the next entity in the supply chain and therefore is used for invoicing and payment purposes.

Interfaces between the IPPs, the existing power plants and the high voltage network is done at the high voltage side of the step-up transformers. According to the Energy Audit Unit adequate meters are installed for all existing power plants in the system which can be used for billing purposes.

PGCB wheels the electricity from generation throughout the 230kV and 132kV transmission network to the distribution networks, whereas the interfaces between transmission and distribution are at the 132kV and the 33kV level. These interfaces are used for billing purposes. However, electricity is received

- at the 132 kV, 33 kV and 11kV network with respect to DESA; and
- at the 33kV and 11kV network with respect to DESCO, WZPDC and the PBSs.

The meter reading inside the electrical system at the interfaces between the BPDB and the distribution companies is carried out by the EAU (Energy Auditing Unit) which forms part of BPDB. The meter reading is done monthly by EAU in presence of representatives of the related company. Metering within the DESA system is done by DESA directly – no EAU staff is required.

Presently DESA is classified as a 132kV consumer meaning that all power consumption is related back to the 132kV level even though the delivery from BPDB may actually take place on the 33kV or even the 11kV level as shown in Figure 2-2.

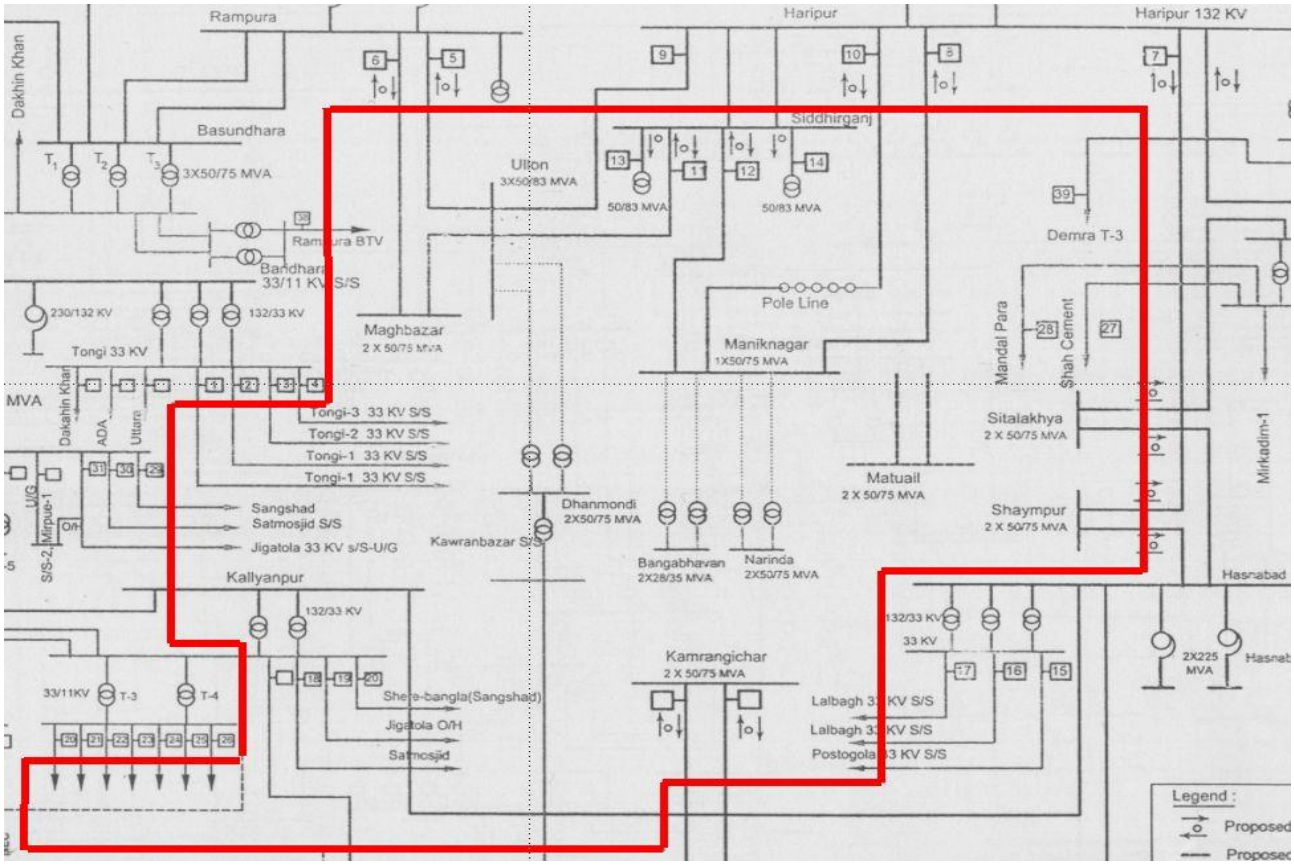

Figure 2-2: Technical Interfaces between BPDB and DESA

We understand that the meter readings at the 33kV level are multiplied by a factor of 1.025 (which is meant to cover the high voltage network losses) and at the 11kV level by 1.0506 (which is meant to cover the high and medium voltage losses).

DESCO, WZPDC and the PBSs are classified as 33kV customers. The interfaces for billing purposes are the 33-kV-feeders in the 132/33-KV PGCB sub-stations even if the distance to the supply area of the PBS is long, so that the voltage quality and the transport capacity of the line is degraded by the long transport distance. 33kV interfaces are already available with respect to the emerging distribution companies, so that the unbundling may not cause problems in that respect.

However, the interfaces between the WZPDC, the emerging distribution companies and the PBSs do not yet have proper solutions. We understand that

the PBSs are either importing electricity on the 33 kV level directly from PGCB or on the 33 kV and 11 kV level through the network of the distribution areas. BPDB and PGCB meter at the 33 kV level and bill according to that meter reading on a 33 kV tariff. The losses in the distribution area network are somehow shared between the distribution area and the PBSs, but it seems that no common rules have been established in that respect.

In addition to that it needs to be considered that these “embedded” PBSs use the medium voltage distribution networks of the WZPDC and the other emerging distribution companies. Until now, such wheeling services provided with the 33kV network from the distribution companies are not paid from the embedded PBSs. This again is a tariff issue and needs to be resolved within the tariff methodology to be prepared by the BERC.

A similar situation occurs with the DESA network which is used for wheeling electricity to DESCO and some PBSs.

We have not absolute clarity about the number of interfaces between the differently operated and managed distribution systems, however, it seems that the metering installations for billing purposes may not yet accurately reflect the apportionment of usage between the various entities. Technically this is not an issue, however, it means that a more complex metering will be required and in consequence the settlement will be as well a more complex.

2.2.2.2 Commercial Interfaces

The commercialization of the Power Sector is still under development. In a typical Single Buyer Market commercial agreements will be required to define the rights and obligations of sellers/purchasers of the electricity services and to allow cost recovery of the sector entities. The various commercial interfaces and the related commercial agreements are as follows:

- long-term Power Purchase Agreements between the Single Buyer and the Independent Power Producers to recover generation cost, energy cost and ancillary services cost;
- a short term Power Purchase Agreement (e.g. three years) between the Single Buyer and the Ashuganj Power Station has been put in place in June 2003;
- no Power Purchase Agreements do exist between the various BPDB generators and the Single Buyer – the commercial interface needs to be established to allow the generation SBUs to operate under a commercial framework. We would consider this to be a precondition for the corporatization of the generation companies.

2.2.2.3 Power Purchase Agreements with IPPs

In general two types of Power Purchase Agreements have been applied so far in Bangladesh

- PPA based on a Minimum Guaranteed Payment which have been applied for three IPPs:
  - KPCL (Guaranteed Capacity: 100MW $\pm$ 10 MW, Effective Date: 17 Oct. 1997, Term: 15 Years);

- NEPC (Guaranteed Capacity: 100MW ± 10 MW, Effective Date: 10 March 1998, Term: 15 Years);
- Westmont Power (Guaranteed Capacity: 110 MW, Effective Date: 10 June 1998, Term: 15 Years)

- PPA based on a Take-or Pay provisions which have been applied for three IPPs:
  - RPCL (Guaranteed Capacity: 140 MW, Term: 15 Years);
  - AES Haripur (Guaranteed Capacity: 350 MW; Term 20 Years);
  - AES Meghnaghat (Guaranteed Capacity 450 MW, Term: 20 Years)

The PPAs based on minimum guaranteed payment differentiate between two charge rates:

- the OMT-charge rate covers capital cost, fixed and variable operation cost (excluding the fuel cost). It is determined in TK/kWh and will be paid for the aggregate net electrical output of the power plant delivered to the transmission network at the delivery point during a billing period (typically a calendar month). The minimum guaranteed payment for OMT will be paid if the monthly plant factor falls below 50% as a result of either BPDB's default or due to an event of force majeure, or a failure to dispatch the plant. In the event that the monthly plant factor exceeds 50% the OMT get paid according to charge rates set out in the appendices to the Power Purchase Agreements.
- The second charge rate is the fuel component (FT) and covers the fuel cost of the plant. The FT is paid for the net electrical output of the power plant delivered to the transmission network during a billing period. The charge rate is denominated in TK/kWh as set out in the appendices of the PPA. For the FT payment it can be noted that the charge rates are independent from the load factor at which the plant is operated.
- Both charge rates differentiate between a US$ and a Taka portion. The foreign portion is adjusted to the development of the US$/Taka exchange rate in relation to a reference US$/Taka exchange rate. The fuel costs are adjusted to the development of the actual fuel cost.
- There is no further adjustment of the OMT-charge rates in accordance with the local and foreign inflation.

The structures of the PPAs based on the minimum guaranteed payment seem to be less efficient than those based on take or pay arrangements. The take or pay arrangements pay Capacity Payment (covering all capital related cost and fixed operation and maintenance cost) for the available capacity of the power plant and Energy Payment (covering fuel cost and variable operation and maintenance cost) for the net electricity delivered to the transmission network. This isolates the IPP from the market and from the actual dispatch of its power plant during the term of the PPA. For the PPAs with a minimum guaranteed payment this is not or only partially the case. This leads to a sub optimal allocation of risks between the IPP and the BPDB. Sub optimized risk allocation is typically recognized by private partners and loaded as risk premium to the sales price of the electricity.

2.2.2.4 Short Term Power Purchase Agreements

The only short term PPA between BPDB and one of the (former) BPDB power stations has been put in place for the Ashuganj Power Supply Company. The PPA

covers a period of two years following project commercial operation date and approximately 1 year prior to the project commercial operation date.[2]

The payment mechanism governing the commercial relationship with BPDB is based on the two payment components – the capacity and the energy payment.

- Capacity Payment is paid for the dependable (tested) capacity of the plant
  - capital cost related capacity payment cover:
    - depreciation;
    - interest; and
    - return on equity
  - operation and maintenance cost related capacity payment
    - operation and maintenance cost of the plant; and
    - administrative expenses.

- Energy Payment is paid for the net electricity output of each generation unit and covers
  - the fuel cost of each unit of the plant based on the average fuel consumption and on an average plant factor of each such unit.

No indexation to local inflation is applied to the capital cost related payment of the Capacity Payment. The operation and maintenance cost related capacity payment are indexed to local inflation, the Energy Payment are adjusted by a gas price indexation factor. No adjustments to currency fluctuations are applied to any of the payment components.

The following needs to be noted:

- The payment structure recognizes only fixed operation and maintenance cost, we would expect that there is a cost component – possibly integrated in the Energy Payment – that allows for recovery of the variable cost.[3]
- The capacity payment does not include an incentive mechanism with respect to the time availability of the plant.
- The capital cost related capacity payment is not adjusted to exchange rate fluctuations, although the loans assigned to APSC are denominated in foreign currency.

2.2.2.5 Bulk Supply Agreement

DESA, DESCO, WZPDC and the PBS's (through REB) procure electricity from BPDB under a Bulk Supply Tariff. The tariff is based on a flat rate and differentiates between the voltage levels of delivery:

132 kV - 1.8932 TK/kWh
33 kV - 1.9409 TK/kWh

The PBS's purchase power from BPDB at the lower rate of 1.8209 TK/kWh for PBSs outside the Dhaka region and at 1.8909 for PBSs adjacent to the DESA

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[2]) Project Commercial Operation Date is the day after finalization of the dependable Capacity Test.

[3]) Variable operation and maintenance cost vary dependent from the output of the power generation unit.

supply area. According to the BPDB commercial operation statistics the average sales price to REB/PBSs was at 1.8405 TK/kWh.

From the perspective of tariff setting it is unclear, why the tariff for electricity sales to REB/PBSs which takes place on the 33kV level differs from the sales tariff of the other distribution companies by some 5.5%. Obviously the lower bulk supply rate is a form of subsidy provided to the PBSs.

No Bulk Supply Agreements do yet exist for DESA and the BPDB Distribution Zones.

- The cost reflectiveness of the bulk supply tariffs is doubtable – according to brief cost calculations based on existing cost.
- The tariffs have not been adjusted in the recent years despite the increasing fuel cost, the ongoing inflation and the deflation of the Taka which impacts BPDB's own generation cost as well as the payment to the IPPs. The rates are most likely not cost recovering from the viewpoint of a single buyer/seller entity.
- The bulk supply tariffs are not economically efficient – no incentives are established.
- There is no established mechanism to pass-through cost increases on the generation cost level.

2.2.2.6 Transmission Service Agreement

Presently no Transmission Service Agreement (TSA) exists in the Bangladesh Power Market. The TSA will typically be entered between the Single Buyer and the transmission system operator (PGCB). Since the Single Buyer is in charge of the power system expansion planning comprising the generation as well as the transmission network, the TSA regulates its interrelationship with PGCB in respect to network expansion and operation.

Commercially PGCB has the role transmission system operator and as such needs to operate the high-voltage network to provide its services in accordance with a number of performance parameter related to the system reliability and stability. As such PGCB undertakes the technical dispatch of the power generators to satisfy the current demand and needs to procure certain "ancillary services" such as voltage control, load frequency control, operating reserve and black start capabilities.

The cost recovery of such services is typically regulated within the TSA. The charges for system operation for the services provided by PGCB are typically paid by the Single Buyer.

2.2.2.7 Transmission Use of System Agreement

PGCB as the owner of the transmission network wheels electricity from the power generators to the distribution companies and eligible customers. To commercialize this service a Transmission Use of System Agreement (TUSA) is typically entered into between the system users (the generators, the distribution companies, the eligible consumers) and PGCB. The way that the power market in Bangladesh is structured presently only the downstream customers pay for the wheeling

services. Since the concept of eligible customers has not yet been established it is only the distribution companies that get charged from PGCB.

Transmission Use of System Agreements are presently not in place at all. The commercial relation is seen only as a pricing arrangement, other aspects of wheeling services are based on the continuation of the operational practices of the integrated system prior to the unbundling of the power sector.

In the absence of a functioning regulatory agency, the wheeling charges are still set by Government tariff order. The wheeling charge is based on the postage stamp methodology, which, despite its well-known disadvantages, is still the only feasible way of charging for wheeling services in the Bangladesh. More sophisticated forms of wheeling charges such as nodal tariffs can only be introduced when more advanced market systems have been introduced.

The distribution companies and BPDB pay wheeling charges to PGCB. The present wheeling charges are at the 132kV end 0.2268 TK/kWh and at the 33kV end 0.2291 TK/kWh, which results in an average Wheeling Charge of 0.2285 TK/kWh.

PGCB has filed a new Wheeling Charge calculation with the BERC in 2004, which indicates an increase of 0.026 TK/kWh (11%) to an average level of 0.2540 TK/kWh. However, so far there was no reaction in that respect has been received from BERC.

Since the wheeling charge is paid for energy, PGCB cannot cover its fixed costs when the amount of energy wheeled is lower than projected. PGCB therefore favors a tariff that is not entirely based on energy, but also considers capacity.

The present concept of wheeling charges just comprises recovery of the capital cost of fixed assets as well as the cost for their operation and maintenance. Other costs resulting from transmission constraints and transmission losses are not covered under the wheeling charges. These costs mainly comprise additional generation cost related

- to the need to dispatch power plants out of their merit order and
- the cost of energy to cover the system inherent transmission losses.

These costs are presently incurred by the Single Buyer through the PPAs and may be recovered from the distribution companies (and eligible customers) through the Bulk Supply Agreement.

2.2.2.8 Connection Agreement

Connection Agreements are typically entered between the transmission company and the users of transmission network. It governs the construction, operation, maintenance and replacement of connection assets and the recovery of the cost to provide these services. They usually depend on

- the peak demand or peak generation taken from or delivered to the high voltage network;
- the distance from the site to interconnect the network;
- the security and reliability of the connection; and
- the connection voltage.

Presently no connection agreements have been established between PGCB and the users of the transmission system.

2.2.2.9 Distribution Use of System Agreement and Distribution Connection Agreement

As mentioned above in Section 2.2.2.2 the 33kV network of the distribution companies is used for the wheeling of electricity to PBSs. In addition to that the Small Power Policy and the Captive Power Policy may allow generators to connect to the medium voltage network and to supply electricity directly to eligible customers or to the distribution companies. There are no commercial arrangements in place to cater for these two issues.

2.3 Summary findings

The commercial principles at the interfaces between the various existing (and future) sector entities are not yet established properly. Technically DESA still owns and operates parts of the 132kV network. A decision has been taken that PGCB shall take over DESA's high voltage network. This makes sense in the light of future transmission expansion planning where the 132kV network around Dhaka will be enforced by a 400kV ring. The transfer of the assets will not be executed within the next years, however discussions have been started on the organizational and operational arrangements at the new network interfaces between DESA (or its successor company) and PGCB.

The metering arrangements may have to be reconsidered. Presently metering for billing of bulk supply tariffs is done at the 132kV and 33kV level for DESA and at the 33kV level for DESCO and WZPDC. However, we have not yet absolute clarity about the interfaces between the differently operated and managed distribution systems and the transmission system, but it seems that the metering installations for billing purposes may not yet accurately reflect the apportionment of usage between the various entities. Technically this is not an issue, however, it means that a more complex metering will be required and in consequence the settlement will be as well a more complex.

Commercial agreements governing the interfaces between the future market participants are not yet in place in a number of areas:

- PPAs with BPDB power stations only exist for APCL at present.
- Bulk Supply Agreements exist for WZPDC and DESCO only. However they are little more than for the determination of the tariff rate.
- Transmission Use of System Agreement and Transmission Connection Agreements are not existent.
- Distribution Use of System Agreements and Distribution Connection Agreements are not existent although required.

We believe that the establishment at least of the major commercial arrangements between the Single Buyer and the BPDB generators, the Single Buyer and the distribution companies and PGCB and the distribution companies may be established even prior to the corporatization of those entities. This may be accompanied by establishing the relevant functions and procedures required for

commercial management of those companies and help to improve their performance prior to the corporatization.

3. Financial Situation of the Existing Sector Entities

The following section provides an overview on the financial situation of the existing power sector entities. The analysis is based on information received from the companies and on discussions held with representatives of the technical, planning, commercial and financial departments.

During the data collection we faced a number of obstacles:

- The decentralization of the administration/registration throughout the respective supply areas makes it sometimes very difficult to receive detailed information. Some information does not seem to be available in appropriate detail in the head quarters of the companies.
- It is part of our task to provide financial restructuring and recovery plans for the entities in the unbundled power sector. Consequently the technical, commercial and financial information has to be segregated to reflect the successor companies of BPDB. This creates a number of problems mainly where balance sheet items (fixed assets, current assets, long term liabilities and short term liabilities) need to be distributed to the successor companies.
- The data received show inconsistencies:
  - the financial statements and the balance sheets between the sector entities are not reconciled (e.g. receivables of BPDB from DESA are not reported as payables of DESA to BPDB at the same figures);
  - metering data on power exports from BPDB to distribution companies are not identical to the metering data on the power imports of such distribution companies;
  - the reporting systems underlying the operational statistics do not seem to be linked to the financial reporting systems and no data reconciliation takes place between the commercial operation statistics and the financial data; and
  - in a number of cases there are even inconsistencies within the commercial operation statistics.

Preliminary financial statements for the FY 2004/05 have been considered for BPDB and DESCO. In previous years the final audited financial statements of some of the companies (DESA, BPDB) have only been available up to nine months following the end of the financial year. Financial statements being published so late following the end of the financial year do not represent any meaningful purpose for the management and stakeholders of the companies. Regular preparation of management accounts and company-wide financial statements may be prepared on a more frequent (at least at a quarterly) basis.

PGCB published its Financial Report for the year 2005 already early 2006. The audit report has been signed at the end of December 2005.

3.1 BPDB

BPDB was established in May 1972 by Presidential Order # 59 as a government owned, vertically integrated utility company. Although the transmission segment has been spun-off, it presently still is a vertically integrated utility with generation and distribution/retail functions. However, the unbundling of BPDB is ongoing and it is envisaged to split it up along functional lines within the next two to three years. BPDB itself shall be converted into a holding company. The role and function of the holding company is not clear yet and subject to the results of an ongoing consultancy assignment.[4]

The following section analyses the operational and financial status of BPDB. Whilst it has been possible to conduct the operational and commercial analysis of BPDB for the generation, single buyer and the distribution segments separately, the analysis of the financial status of BPDB is done for the whole BPDB. A segregation of the financial data into successor entities has not been possible yet.

For BPDB only preliminary financial figures for the FY 2004/05 could be taken into account, at the time of report writing no final (audited) financial statements were available.

The preliminary financial statements used for the analysis date back to December 2005. Since then other (later) preliminary versions have been made available to the consultant. These versions showed significant deviations from the December version and included still a number of unresolved issues. For this reason we decided to base the analysis on the December preliminary financial statements.

3.1.1 Generation

The installed capacity of the BPDB Power Stations is 3,012 MW of which according to the summary statistics for the year 2004/05 some 2,688 MW (89%) have been available, see Table 3-1 below.

	FY 2003/2004				FY 2004/2005			
	Installed Capacity		Derated Capacity		Installed Capacity		Derated Capacity	
	MW	%	MW	%	MW	%	MW	%
BPDB Power Stations	2,696	57.6%	2,408	55.6%	3,012	60.3%	2,688	58.1%
Ashuganj Power Station	724	15.5%	662	15.3%	724	14.5%	676	14.6%
IPP Power Stations	1,260	26.9%	1,260	29.1%	1,260	25.2%	1,260	27.2%
Total Capacity	**4,680**		**4,330**		**4,996**		**4,624**	

Table 3-1: Installed and Derated Generation Capacity

With ongoing unbundling of the power sector, the involvement of Independent Power Producers and the corporatization of the existing power plants, BPDB loses its importance in power generation rapidly. In the Financial Year 1998/99 BPDB still incorporated 86.5% of the power generation. In the mean time this portion has decreased significantly to some 60% due to the establishment of additional IPPs and the corporatization of the Ashuganj power station.

[4]) TA 4264-BAN, Corporatization of BPDB

	2003/04	2004/05	2003/04	2004/05	2003/04	2004/05	Increase in Net
	Net Energy Generation		Market Share		Average Plant Factor		Generation
	GWh	GWh	%	%	%	%	%
BPDB Power Stations	9,412.1	10,234.7	46.91%	48.54%	44.6%	43.5%	8.7%
Isolated Power Stations	3.1	3.7	0.02%	0.02%			19.7%
Ashuganj Power Station	3,168.8	2,988.6	15.79%	14.17%	54.6%	50.5%	-5.7%
IPP Power Stations	7,478.3	7,857.6	37.28%	37.27%	67.8%	71.2%	5.1%
Total Net Generation	**20,062.2**	**21,084.6**	**100%**	**100%**	**52.9%**	**52.1%**	**5.1%**

Table 3-2: Net Electricity Generation

BPDB's market share in electricity generation (see Table 3-2) falls short compared to its portion of the generation capacity for the following reasons:

- The economic dispatch, which is practiced by the load dispatch center, indicates that the BPDB Plants are less efficient than most of the IPP plants. They have higher specific fuel cost and therefore rank lower in the merit order of dispatch. Consequently the BPDB power stations operate in the medium and peak load range whilst the IPPs cover the base load.
- The time availability of the BPDB power stations is certainly lower than for the IPP Power Stations – although detailed figures are not available.

The self-consumption ratio reported at the BPDB plants was in the range of 5.4% in FY 2003/04 and of 5.7% in FY 2004/05. This seems to be rather high for gas-fired power stations, which in international comparison may not be higher than 3%. The high self consumption ratio can be explained b the fact that some of the power stations supply electricity to the houses of employees in the surrounding of the power station free of charge. This practice would require the generators to own a distribution license, which they do not have. It is suggested that these customers may be transferred to the adjacent distribution companies and they may be charged with normal consumer tariffs. May the generators want to subsidize their employees electricity consumption it will be more appropriate and transparent to increase an allowance for electricity consumption in their salaries.

3.1.2 Single Buyer

To date BPDB de facto performs a single buyer function. It buys the electricity from all generators connected to the transmission network and sells it to the distribution companies at the 132kV and 33kV level.

The Single Buyer's costs of power procurement comprise the costs of power generation in its own power stations and the procurement of energy from IPPs and from APSC. Table 3-3 shows an estimate based on the generation cost set out in the FY2003/04 financial statements and various other BPDB statistics.

It shows that BPDB's cost of net generation range at TK 1.91/kWh in FY 2003/04 and increased to TK 1.96/kWh in FY 2004/05, which is mainly due to increasing fuel cost. The specific cost of IPP plants decreased from TK 2.11/kWh in FY 2003/04 to TK 2.03/kWh in FY 2004/05. The reason for this decrease is originated in the increased load factor for the IPP plants.

Cost of Electricity	2003/04			2004/05		
Generation	GWh	TK/kWh	MTK	GWh	TK/kWh	MTK
BPDB - generators	9,412.1			10,234.7		
Capital Cost		0.50	4,729.7		0.47	4,802.8
Depreciation		*0.28*	*2,636.1*		*0.26*	*2,709.2*
Interest		*0.11*	*1,070.2*		*0.10*	*1,070.2*
Exchange Rate Losses		*0.11*	*1,023.4*		*0.10*	*1,023.4*
Fuel Cost		1.15	10,796.4		1.31	13,413.0
Operation and Maintenance		0.26	2,475.7		0.24	2,475.7
Total BPDB Generators		***1.91***	***18,001.8***		***2.02***	***20,691.5***
APSC	3,168.8			2,988.6		
Capacity Payment		0.61	1,935.3		0.65	1,935.3
Fuel Cost		0.82	2,612.3		0.90	2,699.7
Total APSC		***1.44***	***4,547.5***		***1.46***	***4,634.9***
IPPs						
KPCL	494.2	5.43	2,685.4	564.2	5.81	3,275.2
Westmont	463.4	3.06	1,418.1	518.1	2.89	1,498.0
NEPC	550.8	3.79	2,088.7	583.0	3.20	1,868.5
RPCL	531.6	3.97	2,111.4	567.5	3.58	2,029.7
AES Haripur	2,480.4	1.24	3,064.2	2,381.8	1.25	2,967.5
AES Meghnaghat	2,957.9	1.49	4,420.2	3,243.1	1.34	4,339.6
Total IPP	***7,478.3***	***2.11***	***15,788.0***	***7,857.6***	***2.03***	***15,978.5***
Total Cost of Power Purchase	**20,059.1**	**1.91**	**38,337.2**	**21,080.9**	**1.96**	**41,304.9**

Table 3-3: BPDB cost of electricity generation and procurement

The revenues that BPDB as single buyer earns result from the bulk supply of electricity to the existing distribution/retail companies (DESA, DESCO and the PBSs) and to the distribution zones which (following unbundling and corporatization) will purchase energy at the 33kV level.

Revenues from	2003/04			2004/05		
Power Sales	GWh	TK/kWh	MTK	GWh	TK/kWh	MTK
DESA	6,144.9	1.8932	11,634	5,045	1.8932	9,551
DESCO	1,750.2	1.9409	3,397	1,841	1.9409	3,573
WZPDC	0.0	1.9409	0	388.6	1.9409	754
BPDB Distribution Zones	4,941.2	1.9409	9,590	5,985	1.9409	11,616
REB / PBSs	6,011.8	1.8405	11,065	7,039	1.8405	12,955
Total	**18,848**	**1.89**	**35,686**	**20,298**	**1.89**	**38,448**

Table 3-4: Revenues from bulk supply to the distribution/retail companies

Table 3-4 shows an estimation of the revenues of the BPDB Single Buyer function from the bulk supply of electricity to the distribution/retail companies and unbundled areas. The estimation is based on the 132kV and 33kV bulk tariffs that are payable under the present tariff structure. In average bulk tariff rate is at TK 1.89/kWh. Consequently the revenues from bulk supply do not cover the cost of BPDB electricity generation and purchase, see Table 3-5.

Bulk Electricity Sales		FY 2003/04	FY 2004/05
Cost of Electricity Generation	MTK	38,337.2	41,304.9
Revenues from Bulk Electricity Supply	MTK	35,685.7	38,448
Losses from Bulk Electricity Sales	**MTK**	**-2,651.6**	**-2,856.8**
Losses per kWh Bulk Sales	TK/kWh	-0.14	-0.14

Table 3-5: Losses due to bulk electricity supply to distribution/retail sector

This situation places additional constraints on BPDB's cash flow position. Due to the indispensable payment obligations to the IPPs the total losses from bulk electricity supply have to be borne by BPDB and result in a shortfall in cash flow of some TK 0.28/kWh, see Table 3-6.

Impact on BPDB cash flow		FY 2003/04	FY 2004/05
Revenues from Bulk Electricity Supply	MTK	35,685.7	38,448.1
Payment to IPPs	MTK	15,788.0	15,978.5
Payment to Ashuganj PSC	MTK	4,547.5	4,634.9
Cash flow to BPDB generation	*MTK*	*15,350.2*	*17,834.7*
BPDB net electricity generation	GWh	9,412.1	10,234.7
Specific cash flow to BPDB generation	TK/kWh	1.63	1.74
Specific cost of BPDB generation	TK/kWh	1.91	2.02
BPDB shortfall in cash flow	MTK	2,651.6	2,856.8
BPDB specific shortfall in cash flow	TK/kWh	-0.28	-0.28

Table 3-6: BPDB shortfall in cash flow on the bulk supply level

This brief calculation shows that under the present commercial framework the generation segment of BPDB has not been financially viable within the last two years. The reasons are that

- the cost of fuel and operation and maintenance expenses have increased in recent years; and
- the exchange rate of the Taka has devaluated against the US$ and other foreign currencies causing increased expenditure for debt service payment and foreign procured machinery and materials required for power station rehabilitation and maintenance.

Whilst the IPPs have the contractually agreed possibility to pass increased fuel cost, inflation and devaluation through to the Single Buyer (BPDB), this is not possible in the bulk supply to the distribution/retail segment. The bulk supply tariffs have been fixed once by government tariff order in 2003 and have not been adjusted to fuel cost, inflation and exchange rate since then. BPDB is therefore stuck with the cost increases in the BPDB generation segment, which it cannot pass through to the distribution segment.

In addition to that BPDB sells electricity to the PBSs at a lower bulk supply tariff than it does to the other distribution/retail entities. This cross-subsidy sums up to some TK 605 million in FY 2003/04 and TK 707 million in FY 2004/05. In a commercialized power sector such subsidies may not be maintained. It is common sense that rural electrification requires subsidies to achieve financial viability, however, subsidies may not be supplied from a sector entity which otherwise is required to operate under commercial conditions.

3.1.3 Transmission

The BPDB has transferred all its transmission lines and substations to PGCB between 1997 and 2004 and does not perform transmission functions anymore. Despite that BPDB still reports transmission assets in its financial statement with the amount of some TK 7.7 billion.

BPDB still handles some Transmission Projects such as the “Rehabilitation, renovation and augmentation of the grid system” Project. The projects will be handed over to PGCB after finalization at actual cost. The Projects are not reflected in BPDB’s balance sheets.

3.1.4 Performance of the Distribution Segment

BPDB at the end of FY 2004/05 supplied electricity to some 1.46 million customers. This figure excludes the 453 thousand customers in the WZPDC that has been operationally spun off from BPDB in April 2005.

BPDB supplies electricity on the 33kV or the11kV level to PBSs that are embedded in its distribution network.

Table 3-7 summarizes the operational performance of BPDB’s distribution segment for the FY 2003/04 and 2004/05.

BPDB - Aggregated			
		2003/04	2004/05 x)
Imported Electricity	GWh	12,248	12,724
Electricity sold to End Users	GWh	4,910	4,787
Electricity sold to PBSs	GWh	6,005	6,739
Total Electricity Sold	GWh	10,915	11,526
Distribution Loss (excl. PBSs)		21.4%	20.0%
Distribution Losses (incl. PBSs)		10.9%	9.4%
Billed Consumption / End Users	MTK	16,825	16,501
Average Sales Rate / End Users	TK/kWh	3.427	3.447
Total Amount Collected / End Users	MTK	16,976	16,001
Collection to Billing Ratio / End Users		100.9%	97.0%
Collection to Import Ratio / End Users		79.3%	77.6%
Cost of Electricity Procurement / End Users	MTK	12,117	11,616
Wheeling Charge / End Users	MTK	1,430	1,371
Total Cost of Electricity	MTK	13,547	12,987
Distribution Margin per kWh sold to End Users	TK/kWh	0.67	0.73
Distribution margin per kWh collected from E U	TK/kWh	0.70	0.63
Total Number of End Users (average)		1,741,107	1,852,169
xx)	kWh/eu	2,820	2,823
Average electricity bill per End User xx)	TK/eu	9,663	9,704

x) The data include only the months up to the date of transfer to WZPDC 01. April 2005
xx) estimates for the FY 2004/05

Table 3-7: Operational performance of the BPDB distribution segment – aggregated

The picture is not uniform across the distribution zones as shown in Table 3-8. Details on the operational performance of BPDB’s distribution zones can be found in Appendix A to this report.

Operational performance of the BPDB distribution zones FY 2004/05		Central Zone	West Zone	South Zone	North West Zone	Total BPDB
Distribution Losses	%	21.2%	19.6%	19.9%	19.6%	20.0%
Collection to Billing Ratio	%	99.5%	89.7%	98.4%	97.9%	97.9%
Collection to Import Ratio	%	78.4%	72.0%	78.8%	78.7%	78.3%
Average Sales Rate (per billed kWh)	TK/kWh	3.37	3.49	3.48	3.39	3.45
Distribution Margin per kWh sold to end users	TK/kWh	0.61	0.79	0.77	0.69	0.74

Table 3-8: Key performance indicators for the BPDB distribution zones

3.1.5 Financial Situation of BPDB

The financial information given below refers to the company as an entity, as no separate balance sheets and profit & loss accounts for the successor companies are available yet.

Capital and Reserves developed positive from TK 83.0 billion to TK 87.2 billion in FY 2003/04, but decreased to TK 79.3 billion in FY 2004/05. In the same period the net deficit increased from TK 45.7 billion to TK 53.6 billion. The positive development of capital reserves from FY 2002/03 to FY 2003/04 despite the increasing deficit was due to the government contributions of TK 5.5 billion for ongoing projects in FY 2003/04. The main part of these reserves consists of the revaluation reserve of TK 55.7 billion.

The working capital turned from slightly positive to negative in 2004/05. But one may bear in mind that TK 59.6 billion is included in the current assets for accounts receivable (see below), while in the current liabilities TK 57.3 billion are formed by overdue debt serving liabilities (principal and interest).

Long term loans increased in this period, despite the transfer of assets (TK 16.0 billion) and loans (TK 14.9 billion) to Ashuganj Power Station Company Ltd.

BPDB Financial Status		FY 2002/03	FY 2003/04	FY 2004/05
Operating Revenues	TK million	42,843	44,626	44,369
Operating Expenses (excl. Depreciation)	TK million	34,701	37,980	42,242
Depreciation	TK million	4,385	4,785	4,893
Total Operating Expenses	TK million	39,086	42,765	47,136
Operating Result	**TK million**	**3,757**	**1,861**	**-2,767**
Other Non-Operating Income	TK million	0	0	0
EBIT	**TK million**	**3,757**	**1,861**	**-2,767**
Interest Expenses	TK million	2,220	1,577	2,398
Exchange Rate Losses	TK million	872	1,418	1,309
Net Income	TK million	**665**	**-1,133**	**-6,474**
Net Fixed Assets	TK million	76,421	78,095	75,746
Project in Progress/Investment	TK million	44,694	52,296	47,977
Current Assets	TK million	67,096	72,794	84,585
Capital and Reserves	TK million	82,969	87,174	79,311
Equity	TK million	*67,912*	*73,526*	*77,128*
Net Surplus (Deficit)	TK million	*-45,688*	*-47,094*	*-53,566*
Long Term Liabilities	TK million	36,702	41,662	46,222
Medium Term Liabilities	TK million	3,254	3,482	8,941
Short Term Liabilities	TK million	59,928	65,916	85,113
Clearing Accounts	TK million	5,357	4,952	1,635
DSCR		1.01	0.84	0.25
Quick Ratio		0.18	0.41	0.47
Operating Ratio		0.9	1.0	1.1
Return on Net Operating Assets	%	4.9%	2.4%	-3.7%
Return on Equity	%	1.0%	-1.5%	-8.4%

Table 3-9: Financial Status of BPDB

In the year 2000, BPDB has undertaken a revaluation of its fixed assets under the IVVR project (IVVR= Identification, Verification, Valuation and Recording). The result of the evaluation based on the FY 2000/01 values shows an increase of the undepreciated asset value of some TK 55 billion or 43%, see Table 3-10. The revaluation result has not been included in BPDB's balance sheet. Presently the IVVR results are updated to reflect the asset additions to date. The approval by BPDB's Board of Directors is presently in process and we understand that BPDB intends to include the revalued asset value in its 2004/05 balance sheet.

According to BPDB's information this would result in an increase of the annual depreciation by TK 1.9 billion. This would impact the end-use customer tariffs. However, at the present stage of our work we are not yet in the position to evaluate the tariff impact of this revaluation.

Type of Assets	Value as per Audited Balance Sheet 2000/01	Value as per IVVR	Value increase as per IVVR	% increase
Land	10,272,008	21,155,352	10,883,344	111.55
Buildings	7,085,485	13,765,785	6,680,300	94.28
Plant and Machinery	109,393,287	142,670,932	33,277,645	30.42
Other Assts	720,244	4,767,845	4,047,601	561.98
Total Fixed assets	127,471,024	182,359,914	54,888,890	43.06
Stores	6,325,446	14,918,806	8,593,360	135.85

Table 3-10: Result of the revaluation of BPDB's assets

BPDB's financial statements are distorted and it can be stated that the financial status of the company represented in the audited financial statements does not reflect its true financial situation. The following main items can be identified as major problem areas:

- **Accounts receivable:** Uncollected receivables have been (and still are) accumulated over the years without writing off the bad debts. BPDB makes annual provisions on bad debts of 5% of the revenues from the sale of energy to end-use customers. However, no corrections are made with respect to the account receivables to reflect those receivables that need to be considered as uncollected.

  According to the annual report of the FY 2004/05 an amount of TK 49.3 billion is attributable to accounts receivable on sales, see Table 3-11.[5] This represents some 58% of the total current assets and some 27% of the total assets.

BPDB Receivables		Financial Year		
		2002/03	2003/04	2004/05
DESA	TK billion	30.60	32.65	32.70
DESCO	TK billion	1.70	0.32	0.70
WZPDC	TK billion	0.00	0.52	0.50
REB	TK billion	0.00	1.80	2.20
Final Customers	TK billion	12.39	11.86	13.20
Government	*TK billion*	*1.42*	*0.63*	*0.30*
Autonomous	*TK billion*	*3.66*	*2.74*	*1.80*
Private	*TK billion*	*7.32*	*8.49*	*11.10*
Total Receivables	TK billion	44.69	47.15	49.30
Provisions for bad and doubtful debt	TK billion	0.703	0.725	0.8

Table 3-11: BPDB receivables

- Of the accounts receivable of the final customers an estimated 75 % (TK 10 billion; 45.000 cases) are older than 5 years.

[5]) There are significant differences between the commercial operation statistics and the balance sheet; detailed information from the commercial operation statistics show a balance of TK 43.7 billion for 2003/04 while the balance sheet shows TK 47.15 billion.

- Of DESA's accounts receivable some TK 24.8 billion date back to June 2001 or earlier. To this amount can also be added an amount for overdue surcharges, stated by BPDP at TK 37.8 billion at the end of FY 2003/04 and TK 43.8 billion at the end of FY 2004/05. It needs to be noted that DESA records only TK 30.4 billion as payables to BPDB. DESA explains the difference as a result from false meter reading.

It is highly unlikely that BPDB will be able to recover these amounts to the full extent and therefore it will be necessary to reduce the amounts in BPDBs balance sheet as part of the financial restructuring exercise.

- **Debt Service Liabilities:** BPDB's FY 2004/05 balance sheet includes overdue and unpaid debt service liabilities (DSL) of some TK 57.3 billion. These overdue and unpaid debt service liabilities are recorded in historical values and have not been restated at the relevant exchange rate at the end of each FY. It will be necessary to consider, whether the successor companies of BPDB will be able to meet these liabilities from their own resources.

  With respect to unpaid and overdue DSL it needs to be noted that they result from previous usage of electricity and have accumulated due to the inefficiencies of BPDB and as well due to low electricity tariffs.
- **Unfunded Pension Obligations:** BPDB's balance sheet shows provisions for pension funds at the amount of TK1.8 billion. However, this will by far not be sufficient. The transfer of employees to PGCB in 2003 has shown that per employee transferred an amount of TK 378,000 had to be paid. Since the pension commitments are not valued, it is only possible to estimate the pension commitments based on this figure. We have assumed that the commitments per employee have increased with raising salaries and therefore we added some 8.7% to the amount paid for the PGCB employees. With some 18.650 full time employees of BPDB prior to the spin-off of APSC and WZPDC the required provision for pensions would sum up to TK 7.66 billion. The transfer of some 650 employees to APSC and some 2,500 employees to WZPDC would require the paying out of in total some TK 1.3 billion to those employees that changed the company. This issue has not been resolved until now.

  At the moment the pensions are paid by BPDB and charged directly to the Profit & Loss Account. But for the benefit of the employees, to be more flexible in the restructuring process and to prevent shifting the existing obligations to future generations, funding is to be preferred.

3.2 PGCB

The transmission activities have been spun off to PGCB. Although the company was established in 1996, the first asset transfer did not take place until 1999. The transfer of BPDB's transmission assets has been completed in 2003, whilst the asset transfer of DESA is still ongoing- the 132kV grid around Dhaka has yet to be transferred to PGCB.

The analysis is based on the annual reports of 2002/2003 – 2004/2005 (3 years) and statistical information for the same years.

3.2.1 Operational Analysis

The company is responsible for the 230 kV transmission network and of parts of the 132 kV network in Bangladesh. The other part of the 132 kV is operated by DESA in Dhaka and in the area surrounding Dhaka. It has been decided that the transmission network of DESA will be taken over by PGCB in the near future. PGCB plans to extend its network and to include another extra high voltage level of 400kV.

PGCB presently receives the electricity from the generation plants at the 230kV or 132 kV network and delivers it to the distribution network on the 132 kV level (DESA) and at the 33 kV for the DESCO, BPDB, WZPDC and the PBSs, see Table 3-12. In some cases the electricity is not delivered directly to the distribution companies (particularly the PBS's), instead the network of the neighbouring Distribution Company is used. As far as we could discover, the concerned distribution company does not get a reward for its wheeling services.

Energy Flow through the High Voltage Network		Financial Year 2002/03	2003/04	2004/05
BPDB	GWh	12,123	12,584	10,235
APSC	GWh	0	0	2,989
IPPs	GWh	6,299	7,478	7,898
KPCL		456	494	*564*
Westmond Power		528	463	*518*
NEPC		435	551	*583*
Haripur Powet Ltd		2,462	2,480	*2,382*
Meghnaghat Power Ltd		1,960	2,958	*3,243*
RPCL		458	532	*608*
Total net energy generation	GWh	18,422	20,062	21,121
			8.90%	5.28%
Import to transmission network	GWh	18,422	20,062	21,162
Transmission Losses	GWh	728	728	741
	%	*4.0%*	*3.6%*	*3.5%*
Export from Grid to the Distribution Segment	**GWh**	**17,694.2**	**19,333.8**	**20,421.8**
DESA	GWh	8,320	6,209	5,126
DESCO	GWh	0	861	1,841
REB / PBS	GWh	3,173	6,012	7,070
WZPDC (April 2005 onwards)		0	0	386
BPDB Distribution	GWh	6,201	6,251	5,999
West Zone (until March 2005)	GWh	..	..	995
North Zone	GWh	..	..	1,226
Central Zone	GWh	..	..	963
South Zones	GWh	..	..	2,801

Table 3-12: Energy flow through the PGCB high voltage network

To recover its cost, PGCB charges a wheeling charge to the distribution companies to which it is delivering the electricity, see as well Section 2.2.2.6.

The present level of approximately 3.5% of transmission losses can be considered to be very reasonable in the international context. A further reduction to some 3% would possibly be achievable with additional investment on the long run.

3.2.2 Financial Status of PGCB

Capital and reserves increased steadily in line with the total liabilities of the company. The debt to equity ratio is 4, that means that the equity share is 20%. The ratio has been constant compared to the previous FY. This is certainly not the optimum debt to equity ratio, which we would see at a 30% equity portion, however it results from the high amount of loans that have been assigned by BPDB and DESA together with the transfer of the transmission assets.

PGCB shows a rate of return on net assets (RoA) of 6.3% in the FY 2003/04, which is a significant improvement from the previous FY where the RoA was at 3.6%. In FY 2004/05 the RoA improved further to 9.9%, so that the target rate of 10% has almost been achieved. The increase of the wheeling charge in September 2004 contributed to this improvement.

PGCB Financial Status		FY 2002/03	FY 2003/04	FY 2004/05
Operating Revenues	TK million	2,333	3,932	4,731
Operating Expenses (excl. Depreciation)	TK million	310	476	592
Depreciation	TK million	1,092	1,785	1,802
Total Operating Expenses	TK million	1,402	2,261	2,394
Operating Result	**TK million**	**931**	**1,671**	**2,337**
Other Non-Operating Income	TK million	0	0	109
EBIT	**TK million**	**931**	**1,671**	**2,446**
Interest Expenses	TK million	704	1,328	1,198
Exchange Rate Losses	TK million	170	226	827
Income Tax	TK million	0	44	158
Net Income	TK million	**57**	**73**	**263**
Net Fixed Assets	TK million	26,145	26,638	24,588
Project in Progress/Investment	TK million	815	1,841	4,738
Current Assets	TK million	2,621	3,656	6,619
Capital and Reserves	TK million	5,649	5,998	6,765
Equity	TK million	*5,307*	*5,568*	*6,268*
Net Surplus (Deficit)	TK million	*342*	*415*	*497*
Long Term Liabilities	TK million	23,078	23,721	26,179
Short Term Liabilities	TK million	855	2,415	2,665
Clearing Accounts	TK million	0	0	0
DSCR		1.71	1.16	1.30
Quick Ratio		1.95	1.17	2.27
Operating Ratio		0.6	0.6	0.5
Return on Net Operating Assets	%	3.6%	6.3%	9.9%
Return on Equity	%	1.1%	1.3%	4.2%

Table 3-13: Financial Status of PGCB

Current and quick ratio are satisfactory, whilst the DSCR is relatively low and in 2003/04 even fell below the DSCR of 1.3 that is typically required by international lending agencies as a loan covenant.

PGCB has increasing accounts receivable (from TK 1.02 billion in FY 2002/03 to TK 1.75 billion in FY 2004/05). More than 67% of the receivables relate to DESA. But the credit period to customers rose to 134 days, although the company has only a few customers: all the distribution companies and REB's. About 25 % of the receivables is older then 6 months (DESA).

PGCB has introduced a pay-scheme for its employees, which is different from the public sector pay scheme applied in BPDB and DESA. Salaries paid by PGCB to its employees are generally higher than those paid in the public sector entities, but PGCB's payscale does not include pensions and gratuities according to the public pay scheme. Instead it includes a Contributory Provident Fund and gratuities for the benefit of its employees.

Since PGCB had to take over all employees from BPDB engaged in transmission activities, the pension funds for those 1,289 employees that opted to join PGCB had to be paid out. Since pension funds have not been funded at BPDB (see above) the ADB agreed to fund some TK 480 million by a loan to BPDB.

The company has an operating margin of nearly 49% in the FY2004/05, which may seem to be high. But the biggest portion of this margin is needed for interest payment (TK 1.2 billion) and exchange losses (TK 0.83 million). The latter is increasing very rapidly, caused by the weakening of the Taka against the foreign currency.

As part of the transfer of transmission assets from BPDB and DESA to PGCB between 1999 and 2003 PGCB took over a number foreign loans and Government loans related to these assets. However, the loan agreements have not yet been transferred to PGCB so that PGCB is servicing the loans based on a different interest rate of 5% for all loans and a common repayment schedules of 20 years. This differs significantly from the interest rates and repayment schedules foreseen in the original subordinated loan agreements between BPDB and DESA and the Government. This is beneficial to PGCB's income and cash-flow statement.

Presently, PGCB amortises its debt service obligations to BDPB against the unpaid invoices from BDPB for the provision of wheeling services, which does not match with their debt service obligations (5% on a 20-year repayment schedule). PGCB has stopped servicing the loans taken over from DESA because of the non-payment of DESA of PGCB's wheeling services.

Due to the sharp increase in working capital, the company was not able to finance its capital expenditures (partly) internally, although it was a very profitable year for the company, from a historical perspective. And the capital expenditures were not at a very high level (5.5 % of gross assets).

To summarise it can be stated that PGCB is very close to operate on a commercial basis. Nevertheless even PGCB is not in the position to earn sufficient cash flow to adequately contribute to investment financing from its own resources.

3.3 DESA

The following analysis of DESA's present situation is based on the analysis of the annual reports 2002/2003 – 2004/2005 (3 years) and statistical information received in form of the commercial operation statistics

The major operational and financial data of DESA are summarised in the Table 3-14 in Section 3.3.1 and in Table 3-14 in Section 3.3.2 below.

3.3.1 Operational Analysis

DESA was formed as Authority by an Act of parliament in 1990 to take responsibility of supplying electricity within the greater Dhaka area.

DESA supplied electricity to around 0.56 million end-customers in Dhaka at the end of FY 2004/05 supplying some 3,590 GWh to them. DESA presently still operates 132kV transmission lines and substations which will be transferred to PGCB as time passes.

Up to the FY 2003/04 DESA still sold electricity to the PBSs and to DESCO through their network. This practice was stopped beginning 2004 –since then the electricity is sold to the PBSs and DESCO through the BPDB network.

This explains the increase of the network losses in the recent years: In 2004/05 DESA incurred network losses of 30% or 1,536 GWh. If the electricity supplied to DESO and the PBSs is deducted, the network losses in relation to the end users would have been at 33.0% in FY2002/03 and 34.4% in FY 2003/04. Even if it is assumed that the electricity supply to PBSs and DESCO have caused losses in DESA's HV network it shows that DESA has achieved a slight performance improvement.

This is reflected as well in the increase of the distribution margin per sold kWh. In the FY 2002/03 and 2003/04 DESA had to expense more money for the procurement of electricity from BPDB than it earned from the sales of electricity to its customers. That means that DESA had no money to cover their own distribution and retail cost. In the FY 2004/05 the distribution margin is slightly positive with a margin of TK 0.35 /kWh for the first time. This is also due to the fact that DESA's average sales tariff to end users has increased by 7% from TK 3.161 /kWh to TK 3.378 /kWh although there where no changes to the retail tariffs within this period.

DESA				
		2002/03	2003/04	2004/05
Imported Electricity	GWh	8,320.4	6,209.2	5,125.8
				5,125.8
Electricity sold to Consumers	GWh	3,469.8	3,178.5	3,589.9
Electricity sold to DESCO	GWh	867.0	888.8	0.0
Electricity sold to PBSs	GWh	2,274.4	476.5	0.0
Total Electricity Sold	GWh	6,611.2	4,543.8	3,589.9
		0.33002399	34%	
Distribution Losses		20.5%	26.8%	30.0%
Billed Consumption / End Users	MTK	10,210.0	10,047.3	12,126.9
Average Sales Rate / End Users	TK/kWh	2.943	3.161	3.378
Billed Consumption / DESCO	MTK	1,863.1	1,908.0	0.0
Average Sales Rate / DESCO	TK/kWh	2.149	2.147	0.000
Billed Consumption / REB	MTK	4,706.7	1,011.4	0.0
Average Sales Rate REB	TK/kWh	2.069	2.123	0.000
Total Amount Billed	MTK	16,779.8	12,966.7	12,126.9
Total Amount Collected	MTK	15,538.2	14,360.5	12,530.4
Collection to Billing Ratio		92.60%	110.75%	103.33%
Collection to Import Ratio		63.46%	73.16%	72.37%
Cost of Electricity Procurement	MTK	15,752.2	11,755.3	9,704.1
Wheeling Charge	MTK	1,887.1	1,408.2	1,162.5
Total Cost of Electricity	MTK	17,639.2	13,163.5	10,866.6
Distribution Margin per kWh sold	TK/kWh	-0.13	-0.04	0.35
Distribution Margin per kWh collected	TK/kWh	-0.32	0.26	0.46
Total Number of End Users (annual average)		490,558.5	486,945.0	533,992.0
Average electricity consumption per end user	kWh/eu	7,073.1	6,527.4	6,722.7
Average bill per end user	TK/eu	20,813.0	20,633.4	22,709.9

Table 3-14: DESA performance between FY 2002/03 and 2004/05

3.3.2 Financial Status

Since its creation in 1991, DESA's financial status has deteriorated significantly. Presently DESA's capital and reserves are negative ("growing" from TK -13.7 billion in FY 2002/03 to TK -14.8 billion in FY 2004/05), although the GoB supplied TK 1.4 billion as new capital in the same period.

Also the working capital (short term assets – short term liabilities) is negative, meaning the short-term debts are higher than current assets; so the company is also illiquid. This reflects in the fact that DESA has not been able amongst other things:

- to pay for the electricity purchased from BPDB;
- to serve all outstanding debt service liabilities for government and foreign loans[6]; and

[6]) The decrease of the long-term loans in the financial years prior to FY 2002/03 results solely from the fact that a portion of them was transferred to DESCO and REB together with the transfer of distribution assets.

- to fund the pension funds.

DESA Financial Status		FY 2002/03	FY 2003/04	FY 2004/05
Operating Revenues	TK million	16,022	13,093	12,129
Operating Expenses (excl. Depreciation)	TK million	18,167	14,139	11,751
Depreciation	TK million	261	486	502
Total Operating Expenses	TK million	18,428	14,626	12,253
Operating Result	**TK million**	**-2,407**	**-1,533**	**-124**
Other Non-Operating Income	TK million	189	89	85
EBIT	**TK million**	**-2,218**	**-1,443**	**-38**
Interest Expenses	TK million	263	277	279
Exchange Rate Losses	TK million	39	10	21
Net Income	TK million	**-2,520**	**-1,731**	**-338**
Net Fixed Assets	TK million	9,515	9,833	9,437
Project in Progress	TK million	13,688	14,123	16,034
Investment	TK million		2,046	2,232
Current Assets	TK million	21,337	18,883	18,561
Capital and Reserves	TK million	-13,744	-14,585	-14,840
Equity	TK million	*9,962*	*10,814*	*11,340*
Net Surplus (Deficit)	TK million	*-30,107*	*-28,377*	*-32,175*
Long Term Liabilities	TK million	11,235	12,776	13,809
Medium Term Liabilities	TK million	1,329	1,404	2,056
Short Term Liabilities	TK million	45,719	45,291	45,239
DSCR		-12.6	-18.7	0.41
Quick Ratio		0.48	0.43	0.42
Operating Ratio		1.2	1.1	1.0
Return on Net Operating Assets	%	-23.3%	-14.7%	-0.4%
Return on Equity	%	-25.3%	-16.0%	-3.0%

Table 3-14: Financial Status of DESA

As mentioned above the distribution margin shows slightly positive figures in FY 2003/04. However, this is not enough to cover the out-of-pocket expenses like salaries and maintenance (let alone depreciation). Besides this, the company has the burden of exchange losses, which vary from TK 374 million in FY 2001/02 to TK 10 million in FY 2003/04.

This results in high current liabilities of TK 45.2 billion at the end of FY 2004/05. The major items within these current liabilities consist of

- overdue debt service liabilities for foreign loans of TK 11.1 billion comprising TK 8.5 billion in interest and TK 2.6 billion of principal (25% of the current liabilities); and,
- TK 30.7 billion payable to BPDB and PGCB for the purchase of electricity and wheeling services.

Similar to BPDB the debt service liabilities related to foreign currency denominated loans are stated in historical values although it would be required to restate them at the exchange rates at the time of preparing the balance sheets.

Like BPDB's balance sheet, DESA's balance sheet does not show sufficient provisions for pensions of the employees. An indication of the amounts required can be provided using the figures used for the transfer of staff from BPDB to PGCB. (1,270 employees have been transferred at a cost of some TK 480 million, or TK

378,000 per person). Currently the provisions shown in the balance sheet are at TK 0.197 billion.

The major problem however is that the pension commitments are largely unfunded. In the case of the transfer of the employees to a successor company or in case of retrenchment of employees, this amount would have to be settled.

Within the Current Assets, DESA shows huge amounts of receivables from end-use customers, although the figures between FY 2002/03 and FY2004/05 have decreased from TK 12.1 billion to TK 8.1 billion. This reduction has been achieved by:

- downward adjustment the accounts receivables during the FY 2003/04 by TK 1.5 billion against debt service liabilities;
- the transfer of accounts receivable to DESCO and REB of in total TK 1.86 billion; and
- a collection/billing ratio of above 100% (more money has been collected than billed).

DESA Receivables		Financial Year		
		2002/03	2003/04	2004/05
DESCO/REB [1]	TK billion	0.00	1.86	1.80
DESCO/REB [2]	TK billion	2.18	2.18	2.18
Final customers	TK billion	12.10	8.10	8.10
Government	*TK billion*		*0.31*	*0.20*
Autonomous	*TK billion*		*1.25*	*1.00*
Private	*TK billion*		*6.54*	*6.90*
Total receivables	TK billion	14.28	12.14	12.08
Provision for bad and doubtful debt	TK billion	1.48	1.48	1.50

[1] Accounts receivable on electricity sales to DESCO and REB

[2] Accounts receivable on handed over customers

Table 3-15: Accounts Receivable

The accounts receivable comprise TK 8.1 billion from end-use customers and TK 1.8 billion from DESCO and REB. In addition DESA reports some accounts receivable to DESCO and REB for customers. TK 2.2 billion is receivable from DESCO and REB for transferred accounts receivable for handed over customers, as shown in Table 3-15.

Of the accounts an estimated TK 9 billion is older then 3 years and therefore seems to be not collectable; the provision for bad debts is only TK 1.5 billion. We were informed that it is legally not allowed to write off these debts.

For the more recent accounts receivable a provision for bad debts of 5% is said to be reasonable.

There are issues in relation to the statements of fixed assets:

- DESA does not maintain an asset register that would allow to retrace the assets in the books to their physical location. As well it is not possible to recognise with certainty the quantities of certain types of assets installed in DESA's system and it is not possible to receive information on the age structure of these assets.
- The value of the projects in progress is TK 16.0 billion in FY 2004/05 (TK 14.1 billion FY 2003/04). This value is higher than the net fixed assets (TK 9.4 billion in FY 2004/05). According to the 2004/05 financial statements of DESA

disbursement for ongoing loans can only be note for one project. No transfers of work in progress to fixed assets has taken place.

- The major project in progress is related to the Greater Dhaka Power Distribution Project (Phase IV) – due to the nature of this project it may be advisable to transfer the portion of the project to Fixed Assets so that depreciation can be charged from the time when the assets have been brought into use.

This suggests, that the actual value of the Fixed Assets (incl. work in progress) is overstated and that the fixed assets have been under-depreciated in the recent years.

An additional issue arises from the appraisal surplus of TK 5.995 billion shown in DESA's balance sheet. The appraisal surplus results from the asset revaluation which was performed in 1990 and was allocated to DESA in 1991. Since then the value has been maintained unchanged. The DESA's auditor suggests in its FY 2003/04 that the amount may be transferred to equity, however, considering the above issue in relation to the under-depreciation (over-statement) of the fixed assets it might be required to use the appraisal surplus as an offset.

In discussions held with representatives from the DESA finance department it was revealed that some of the loans reported in the balance sheets are "inherited" from BPDB at the time of DESA's creation. There were and still are no loan agreements with respect to those loans – a situation that is not satisfactory to any of the parties concerned.

In summary it can be said that the financial statements do not accurately reflect the financial situation of DESA. The financial statements give the impression of a company with a rapidly deteriorating financial situation. In order to repay its loans it needs new loans, paid in capital, transfer of assets and loans or it is activating its obligations and not paying its suppliers. And as the auditor stated in the annual reports 2002/03 "…consequently DESA is now running on loans and credits. In our opinion, an institution like DESA cannot be allowed to run on loans and credits and therefore, it is high time to take a positive decision." A similar statement can be found in the audited financial statements for the FY 2003/04. But until now no visible actions have been taken to redress the situation and to make it a vital distribution company.

3.4 DESCO

DESCO has been corporatized in 1996 as a wholly owned subsidiary of DESA. It started commercial operations in 1998 after the Mirpur service area had been handed over to DESCO. This was followed by the transfer of the Gulshan supply area in 2003. It is envisaged that DESCO takes over the Tongi service area with some 50,000 customers. At present DESCO supplies electricity to 0.26 million customers in the Dhaka area.

The following analysis is based on the annual reports from the FY2002/2003 – 2004/2005 (3 years). The annual report for the year 2004/05 was still not quite finalised during our visit in February 2006. DESCO's financial management however confirmed that the figures are already determined and only minor changes are to be expected with respect to the financial audit report.

3.4.1 Operational Analysis

When DESCO started its operations the idea was to outsource the major part of its field operations, i.e. maintenance of the network, meter reading, billing, connecting and disconnecting customers and installation of meters. The supervision and the functions in one zone are done by its own employees to benchmark and evaluate the performance of the contractors.

DESCO				
		2002/03	2003/04	2004/05
Imported Electricity	GWh	855.8	1,739.9	1,842.9
				1,842.9
Electricity sold to Consumers	GWh	675.5	1,408.0	1,536.3
Electricity sold to PBSs	GWh	0.0	0.0	0.0
Total Electricity Sold	GWh	675.5	1,408.0	1,536.3
Distribution Losses		21.06%	19.07%	16.64%
Billed Consumption / End Users	MTK	2,216.7	4,902.3	5,466.1
Average Sales Rate / End Users	TK/kWh	3.281	3.482	3.558
Total Amount Collected / End Users	MTK	1,642.7	4,305.9	5,305.9
Collection to Billing Ratio / End Users		74.10%	87.83%	97.07%
Collection to Import Ratio / End Users		58.50%	71.08%	80.92%
Cost of Electricity Procurement / End Users	MTK	1,661.0	3,376.9	3,576.9
Wheeling Charge / End Users	MTK	196.1	398.6	422.2
Total Cost of Electricity / End Users	MTK	1,857.1	3,775.5	3,999.1
Distribution Margin per kWh sold to end users	TK/kWh	0.53	0.80	0.95
Distribution margin per kWh collected from eu	TK/kWh	-0.32	0.38	0.85
Total Number of End Users (average)		157,569	222,886	252,120
Average electricity consumption per end user	kWh/eu	4,287.3	6,317.3	6,093.6
Average bill per end user	TK/eu	14,068.48	21,994.76	21,680.53

Table 3-16: Operational Performance of DESCO

In the last three financial years DESCO's operational performance has improved significantly. The collection/billing ratio has increased from 74% in the FY 2002/03 to 97% in FY 2004/05. In line with this increase the collection/import ratio improved from 58.5% to 80.9% within the same period. The distribution margin of DESCO reached TK 0.95/kWh and hence is the highest of all distribution companies presently in operation.

3.4.2 Financial Status

Capital and reserves grew, due to the fact that the company was able to improve its earnings, resulting in the net surplus to increase from TK -331 million (deficit) in 2002/03 to TK 555 million in 2004/05. Nevertheless the share of capital and reserves of total liabilities decreased from 24% to 15 %. Reason for this were the investment programme, the transfer of assets from DESA, together with loans, and the increase in working capital.

DESCO Financial Status		FY 2002/03	FY 2003/04	FY 2004/05
Operating Revenues	TK million	2,179	4,955	5,534
Operating Expenses (excl. Depreciation)	TK million	1,980	4,044	4,322
Depreciation	TK million	94	302	332
Total Operating Expenses	TK million	2,074	4,346	4,654
Operating Result	**TK million**	**105**	**609**	**880**
Other Non-Operating Income	TK million	17	27	44
EBIT	**TK million**	**121**	**636**	**923**
Interest Expenses	TK million	113	162	192
Exchange Rate Losses	TK million	0	135	183
Income Tax	TK million	0	0	0
Net Income	TK million	**9**	**338**	**548**
Net Fixed Assets	TK million	2,035	4,367	4,513
Project in Progress/Investment	TK million	0	0	0
Current Assets	TK million	3,277	4,466	5,851
Capital and Reserves	TK million	1,015	1,353	1,901
Equity	TK million	*1,346*	*1,346*	*1,271*
Net Surplus (Deficit)	TK million	*-331*	*7*	*555*
Long Term Liabilities	TK million	2,521	5,320	5,680
Current Liabilities	TK million	1,775	2,160	2,512
Clearing Accounts	TK million	0	0	0
DSCR		0.53	1.23	3.12
Quick Ratio		1.15	1.50	1.91
Operating Ratio		1.0	0.9	0.8
Return on Net Operating Assets	%	6.0%	14.0%	19.5%
Return on Equity	%	0.7%	25.1%	43.1%

Table 3-17: Financial Status of DESCO

DESCO shows some TK 0.6 billion in payables to DESA which result from electricity purchases up to December 2003. The amount has not been confirmed from DESA and still needs to be verified.

DESCO shows a total amount of TK 2.3 billion of accounts receivable from end-use customers which accrued during operation up to the end of FY 2004/05. The accounts receivable accounted for 8.2 billing months in May 2003 with the take over of Gulshan supply area. Towards the end of FY 2003/04 this was already reduced to a five months billing equivalent. In FY 2003/04 the company provided for the first time an amount of 0.5% of the account receivable as doubtful debt. The accounts receivable were corrected accordingly.

The annual reports of DESA for the FY 2003/04 and 2004/05 identify an amount of TK 2.18 billion assigned to DESCO and REB for receivables belonging to customers transferred by DESA to DESCO and REB. In discussions with DESCO, we were informed that the company did not take over any of the accounts receivable, nor does it actively try to collect them. Only when customers pay voluntarily (some of) these old bills, to receive DESCO's green card for correct payment, then this amount is transferred to DESA.

The balance sheet was influenced highly by the transfer of assets in the Gulshan area (TK 2.0 billion) and a loan for the same amount from DESA. However, the loan amount as well as the value of the assets transferred to DESCO have not been confirmed yet.

DESCO included a gratuity scheme in its pay scheme for the employees under which the company pays two months of the last basic salary for every completed year of service. This applies to all employees who completed three years of service with the company. The short history of the company explains the low provision for gratuities of TK 0.12 billion although it is mentioned in the latest annual report that the liability shown in the balance sheet does not reflect the expected payments under the companies retirement scheme. DESCO has received approval by the National Board of Revenue to set up a Gratuity Fund.

As DESCO improved the distribution margin significantly due to the reduction in system losses and due to the higher average sales rate per kWh, it was in the position to record net profits of TK 0.338 billion in FY 2003/04 and TK 0.548 billion in FY 2004/05. It achieved a return on assets of 14% and a return on equity of 43%, which is unique in the Bangladesh Power Sector. No dividends where paid in this FY.

In 2003/04 the company for the first time recorded exchange losses on its foreign loans, which took nearly one third of company's net income.

In summary, DESCO has been very successful in improving its operational performance by reducing its distribution losses and increasing it billing to collection ratio. Its collection to import ratio is at nearly 81% and therefore the second highest in the distribution segment in the Bangladesh power sector with the exception of the PBSs which record an import to collection ratio of 83.4%. Its outsourcing strategy has as well improved their distribution margin, which contributed as well to its financial success. On the other hand it has to be mentioned that DESCO operates in a comparatively favourable supply area which allows for high average revenues and low specific cost of supply.

3.5 West Zone Power Distribution Company

The WZPDC was incorporated in 2003. It took over the collection, meter reading and billing activities and commenced its separate operations during 2003/2004. The operation was separated from BPDB starting April 2005 with the transfer of the assets. Currently it serves 450,000 customers.

Our analysis is based on the annual report 2003/04 and the provisional figures for 2004/05, including the operational statistics for these 2 years.

Full operations started only in April 2005, so no financial trends can be given at this moment.

From the operational statistics of the past 2 years some improvement can be recognized in the west zone power distribution:

- system losses dropped from 22.9 % to 19.2 % after take over of the assets;
- the distribution margin increased from TK 0.64/kWh to TK 0.83/kWh in the last three months of FY 2004/05;
- the collection/billing and the collection/import ratio increased significantly in the same period.

BPDB - West Zone				
		2003/04	2004/05 x)	WZPDC xx)
Imported Electricity	GWh	2,294.8	1,754.4	397.6
Electricity sold to Consumers	GWh	1,036.0	799.2	312.2
Electricity sold to PBSs	GWh	952.0	759.8	11.3
Total Electricity Sold	GWh	1,988.0	1,559.0	323.5
Distribution Loss (excl. PBSs)		22.85%	19.64%	19.17%
Distribution Losses (incl. PBSs)	GWh	13.37%	11.14%	18.63%
Billed Consumption / End Users	MTK	3,579.6	2,792.7	1,098.3
Average Sales Rate / End Users	TK/kWh	3.455	3.494	3.518
Total Amount Collected / End Users	MTK	3,772.9	2,503.9	1,226.6
Collection to Billing Ratio / End Users		105.40%	89.66%	111.69%
Collection to Import Ratio / End Users		81.32%	72.05%	90.27%
Cost of Electricity Procurement / End Users	MTK	2,606.2	1,930.4	749.7
Wheeling Charge / End Users	MTK	307.6	227.9	88.5
Total Cost of Electricity	MTK	2,913.9	2,158.3	838.2
Distribution Margin per kWh sold to end users	TK/kWh	0.64	0.79	0.83
Distribution margin per kWh collected from eu	TK/kWh	0.83	0.43	1.24
Total Number of End Users (average)		415,978	439,489	442,227
Average electricity consumption per end user	kWh/eu	2,490.5	2,424.7	2,823.9
Average electricity bill per end user	TK/eu	8,605.27	8,472.56	9,933.94

x) The data include only the months up to the date of transfer to WZPDC 01. April 2005
xx) West Zone Power Distribution Company - covering April to June 2005

Table 3-18: Operational Data - WZPDC

According to the provisional financial statements WZPDC has taken over the fixed assets from BPDB at a depreciated book value of TK 4.63 billion of which TK 2.95 billion are considered to be an equity contribution, whilst TK 1.66 billion are transferred as loan.

WZPDC took over an amount of 3.2 billion TK against the receivables from BPDB. The accounts receivable represent a credit period to customers of 296 days against the sales reported in the commercial statistics for the whole year. It is questionable to what extent these receivables can be recovered through WZPDC.

3.6 Ashuganj Power Station Company

APSC so far is the only generating company separated from BPDB. It was created in 2003 as a corporatized company during FY 2004/2005. BPDB buys all electricity generated by the power station (installed capacity 724 MW) on the basis of a Power Purchase Agreement (see Section 2.2.2.4). The PPA between BPDB and APSC was executed only in May 2005. Up to August 2005 APSC was paid on a provisional tariff, which was determined on a 5% return on equity and an average fuel cost.

Our analysis is based on the unaudited financial statement 2004 (ending in December 2004) with comparable figures for 2003. APSC is the only entity in the power sector which chooses a different Financial Year for its financial statements than all other entities in the power sector.

The generation assets were transferred from BPDB to APSC at a net value of TK 15.1 billion plus some TK 0.9 billion of inventory. The provisional vendors agreement was based on an asset value of TK 23.5 billion – a result of the IVVR revaluation of fixed assets. However, for purposes of achieving a lower power purchase price this value was revised.

APSC took over foreign loans that have been related to Ashuganj power station (TK 4.5 billion) and debt service liabilities in the magnitude of TK 10.1 billion. Considering the equity of TK 1.2 billion this results in an equity:debt ratio of (8% : 92%). The long term loans (a total of TK 14.9 billion) form nearly 90 % of the total liabilities.

In the 15 months of operation, the outstanding amount of payables from BPDB already is at TK 1.7 billion (as of December 2004) which equals to some 4.5 average billing months. Preliminary information from APSC indicates that this amount has already increased to TK 2.7 billion in June 2005, equivalent to 7 months of sales).

The cash flow statement shows that the funds generated internally were almost completely needed for financing the working capital. The increase in working capital was due to the increase of accounts receivables from BPBD.

APSCL **Financial Status**		**FY 2003**	**FY 2004**
Operating Revenues	TK million	2,597	4,597
Operating Expenses (excl. Depreciation)	TK million	1,709	3,071
Depreciation	TK million	521	896
Total Operating Expenses	TK million	2,230	3,967
Operating Result	**TK million**	**367**	**631**
Other Non-Operating Income	TK million	0.4	3.4
EBIT	**TK million**	**368**	**634**
Interest Expenses	TK million	367	629
Exchange Rate Losses	TK million	0	0
Net Income	TK million	**0.4**	**4.7**
Net Fixed Assets	TK million	14,602	13,863
Project in Progress/Investment	TK million		
Current Assets	TK million	1,601	2,716
Capital and Reserves	TK million	1,191	1,188
Equity	TK million	*1,188*	*1,188*
Net Surplus (Deficit)	TK million	*3.2*	*0.22*
Long Term Liabilities	TK million	14,861	14,861
Current Liabilities	TK million	153	527
DSCR		2.18	1.79
Quick Ratio		0.18	0.41
Operating Ratio		0.9	0.9
Return on Net Operating Assets	%	2.5%	4.6%
Return on Equity	%	0.0%	0.4%

Table 3-19: Financial Status of APSCL

The financial figures given for the years 2003 and 2004 (see Table 3-19) give the impression that the company earns enough to pay its debt service (debt service coverage ratio of 1.8 in 2004). However, APSC did not pay interest on the loans transferred from BPDB, nor did it pay the principals for any of the outstanding loans. If total debt service liabilities were considered instead of the actual payments made, the DSCR would be around 1. The return on assets is only 4.6 % and the return on equity is 0.4 %, too low to form a healthy financial balance sheet. It is questionable whether the company is in the position to recover these liabilities under the present tariff structure.

3.7 EGCB

The company was registered on November 23, 1996 as Meghnagat Power Company Ltd. Per special resolution the management changed the company's name to the present name of Electricity Generation Company of Bangladesh (EGCB) on 16 February 2004.

The company is presently financed by a loan from BPDB (TK 14.3 million).
At present the assets of the company consist of office equipment and activated expenses for the development of the 2 x 120 MW capacity addition. The Chairman and directors of EGCB own the shares.

The EGCB presently develops the Siddhirganj power project, which finally will consist of 2 x 120 MW open cycle gas turbines and 2 x 150 MW open cycle gas turbines as peaking power plants to be built at the existing Siddhirganj power station site. Funding of the project is through IDA (2 x 150 MW OCGT) and ADB (2 x 120 MW OCGT). The tender process for the 2 x 120 MW OCGT under ADB financing is ongoing. EGCB has evaluated the technical proposals and submitted their results to ADB for approval in early October. The results of the financial evaluation have been submitted to ADB for approval in early June 2006. Only two Bidders participated in the tender.

Another 360 MW Combined Cycle Power Plant at the Haripur Power Station site under JBIC financing is under process.

With respect to the 2 x 150 MW OCGT under IDA financing tendering has not yet commenced. The draft tender documents have been submitted to World Bank for approval in June 2006.

It is intended that EGCB will take over the existing 50 MW steam turbine and the 210 MW steam turbine at the Siddhirganj site and the existing 90 MW open cycle gas turbines at the Haripur site.

If all these plans are realized, EGCB will own 1200 MW of generation capacity and hence be the largest generation company in Bangladesh.

It is EGCB's task to supervise the construction of the gas turbine plants and it will be responsible for the generation of power from the plants. The power will be sold to the single buyer under a Power Purchase Agreement. The operation and maintenance of the plant will be handed over to a Operation and Maintenance Contractor which will work under a performance-based O&M Agreement.

A transaction advisor (PriceWaterhouse Coopers) for the O&M Contracting has been appointed with some delay and will commence work by middle of 2006. Besides the task of the procurement of the O&M Contractor, the transaction advisor will prepare a

Business Plan for EGCB, advise on EGCB's corporate governance and prepare the Power Purchase Agreements with BPDB. In addition to that the evaluation and the procedures for the transfer of the existing assets will be prepared under a separate consultancy assignment.

3.8 Summary – Financial Status of the Existing Sector Entities

The above review on the current status of the power sector still suffers from a lack of up to date financial data and the fact that the information that we received shows significant inconsistencies. Nevertheless there are a number of conclusions that can be drawn at this stage of our work in respect to the financial restructuring and recovery plan.

The above analysis shows that the whole power sector is suffering from a shortage of liquidity, which is a result of the high system losses. They result from a number of reasons:

- technical losses mainly occur in the distribution systems and are due to undersized and overloaded equipment, outdated design of the networks and poor network maintenance;
- the end-use customer meters are mostly very old and are not maintained and calibrated on a regular basis;
- non-technical losses result from illegal connections and theft of electricity;
- low billing ratio of registered customers;
- low collection ratios due to non-payment of customers, whereas a major problem area is related to government and autonomous/semi government institutions;
- false meter reading which is mostly a result of collusion between customers and the meter readers; and
- poor internal controls such as metering within the distribution system to identify high loss areas

The recent establishment of SBUs in BPDB has certainly helped to improve the performance of the company, nevertheless there are still significant problems that need to be addressed:

- Collection ratios for end-use customers in the last two financial years have been above 100%, which means that a portion of the outstanding customer receivables has been collected. In consequence the average credit period for customers has decreased. But still the credit periods are significantly longer then usual in the energy business.
- BPDB in its function as the single seller of electricity is suffering from the fact, that DESA as the largest single electricity customer from BPDB is not in the position to pay the full amount of electricity bills.
- In addition to that BPBD is squeezed between rising generating cost and fixed bulk supply tariffs to the distribution companies, which do not allow them to pass on cost increases due to inflation, fuel cost and exchange rate devaluation.
- The lack of cash flow does not only lead to a lack of maintenance in BPDB's distribution networks, it also affects the efficiency of power generation. Overhauls and major maintenance of generating units are performed irregularly. It is not driven by maintenance schedules but by the availability of money. This also means that maintenance measures are undertaken during the summer (peak) season, thereby reducing the availability of generation capacity at peak hours. The irregularity of major overhauls as well as the complex procurement

procedures resulted in long lead times for the procurement of the relevant materials and spare parts.

DESA's major problem is related to the high system losses and the low billing and collection ratios. System losses are presently at some 30%. Again the lack of cash flow is covered by the fact that DESA does not serve its debt service payments to the GOB and that it is not able to pay for the electricity purchased from BPDB. DESA has suffered for some time from the fact that it purchased electricity from BPDB which was sold on to DESCO and some PBSs at the same bulk supply rates that DESA had to pay to BPDB. Therefore DESA carried all transmission losses in their network. This malpractice has been stopped in 2004. Since then BPDB sells electricity directly to DESCO and the PBSs at the relevant bulk supply level.

The comparison between the corporatized sector entities DESCO and PGCB and public utilities BPDB and DESA shows that significant performance improvements could be achieved under the corporatized entities. DESCO for example was in the position to reduce their distribution losses within the period of three years to some 16.6% in the FY 2004/05, which contributed to the largest extent to the positive development of its financial status. The corporatization of the WZPDC has already shown some performance improvements in terms of loss reduction and increased collection ratio, although it is too early to judge whether this short term success will be sustainable under the given circumstances.

4. Financial Restructuring of the Balance Sheets

The analysis shows that the balance sheets of some of the companies need to be restructured to ensure that the emerging power sector entities will be able to start their operations with the prospect of a sustainable future. It might be arguable what level of financial restructuring is required and what can be considered as a financial viable basis for future operations. As an orientation the loan covenants set out by the international lending agencies in the project agreements may be applied. They comprise

- a debt –equity ratio not exceeding 70:30;
- a debt service coverage ratio of at least 1.3;
- a post tax rate of return on equity of at least 15%;
- a rate of return on net fixed assets of at least 10%; and
- a collection import ratio of 85%.

Measured against these covenants only DESCO and PGCB are operating above or at the required commercial level.

According to the analysis of the financial status of the existing companies the financial restructuring measures will be focussed on DESA and BPDB. However, they will affect the balance sheet of the other power sector entities as well.

The balance sheet of the Ashuganj PSC will have to be revisited with respect to the low equity portion, which again is due to the high debt service liabilities that were shifted to the company from BPDB.

As a result of the analysis of the financial status of the various power sector entities the following can be summarized:

- DESA's, BPDB's as well as APSC's balance sheets contain large amounts of unpaid and overdue debt service liabilities to the Government of Bangladesh. Whilst DESA and BPDB accumulated the DSL over the years, APSC "inherited" them from BPDB as part of the corporatization process. It needs to be noted, that the foreign currency portion of the DSL are not valued at the actual exchange rate at balance sheet date and hence are understated.
- All power sector entities have accumulated huge outstanding payment for electricity from end-use customers over the years. It is unlikely that these accounts receivable will be recoverable at all. This applies primarily to BPDB and DESA.
- DESA transferred accounts receivable to DESCO with the take-over of the Gulshan service area, which are not recognized in DESCO's balance sheet.
- There are large cross debts between DESA and BPDB for electricity delivery from BPDB to DESA dating back to the early 1990ies when DESA was created.
- Cross debts between the power sector entities have not been reconciled in the last years and therefore show different values in the different balance sheets.
- BPDB and DESA have significant pension obligations which are not recorded in the balance sheets and to the large extent unfunded.
- There is evidence that the value of the fixed assets in the DESA books are overstated due to the delayed transfer of work under progress to the fixed assets in operation and the related fact that some of the assets have been in operation for a number of years without being depreciated.

- Fixed assets of DESA, DESCO, PGCB, WZPDC and APSC have not be re-valued and are recorded in the balance sheets at their 1991 value.
- BPDB has undertaken an evaluation of its fixed assets in the year 2000. The valuation is considered to be very high and – under the present tariff constraints – will lead to asset values that will not be recoverable.

The following sections describe the details of the financial restructuring measures to be undertaken to clean the balance sheets.

4.1 Existing proposals for financial restructuring

We have identified two proposals for financial restructuring that have been prepared recently for power sector entities in Bangladesh:

- Under the TA No. 4379-BAN: Power Sector Development Program II, Component A – Support for Power Sector Reform, ADB retained consulting services from Nexant to assist and support the Government of Bangladesh in the reform and restructuring process of the power sector.[7]
- Under the TA No. 3978-BAN: Corporatization of DESA, ADB commissioned British Power International to assist the government and DESA to corporatize DESA, introduce modern management information systems in the new company, and integrate the new company into the power network as a distinct power distributor.

4.1.1 The Nexant Proposal for financial restructuring of BPDB and DESA

As per Terms of Reference, the Nexant report is mainly concerned with the financial restructuring of DESA and BPDB as an entire company.
The proposed financial restructuring measures under the ADB TA 4379-BAN comprised the following:

- Accounts receivable:
  - The end-use consumer accounts receivable may be written-off to a level which can be considered in line with prudent accounting practices.
  - Receivables and from government and semi-governmental and autonomous institutions in excess of a six months billing may be off-set against debt service liabilities.
  - The cross-debt between DESA and BGCP for electricity import and between DESA and PGCB for wheeling services may be set-off against DSL in the books of BPDB. Parts of DESA's cash and bank balances may be used to pay back a (although small) portion of the DESA's debt.
  - Differences in the balance of the accounts receivable between DESCO and DESA may be reconciled.
  - Other balances in inter-company accounts may be set-off against DSL.
- Debt Service Liabilities:
  - All outstanding DSL owed by BPDB, DESA and Ashuganj to GOB may be converted to equity.

[7]) Draft Interim Report – Component A: Support for Power Sector Reform and Restructuring – submitted by Nexant on 31 July 2005.

    - This step is to avoid the necessary increase of the tariffs to enable the utilities to pay-off the outstanding and overdue DSL and to ensure that future debt service obligations of the utilities and their successor companies can be served.
- Long term Loans:
    - The balance of outstanding foreign and local currency loans may be retained by the power sector entities and not be written-off.
    - The resulting future debt may be serviced by the utilities to re-gain the confidence of the lending agencies.
- Unrecorded pension obligations and gratuities:
    - The provisions for unrecorded pension obligations and gratuities may be introduced in the balance sheet.
    - Funding of these obligations has yet to be secured.
- Assets:
    - The assets of those utilities that have been valued in 1991 may undergo a re-valuation before they are transferred to the future successor companies.
    - The asset valuation of BPDB may undergo a critical review considering the recoverability of the asset value through future revenues.

4.1.2 British Power International (BPI) proposal for financial restructuring of DESA

Under the ADB TA on the corporatization of DESA, the consultant prepared a first assessment of the financial situation of DESA and made a first proposal for the financial restructuring of DESA.. The following summarizes its preliminary recommendations:

- All liabilities for foreign debt may be consolidated.
- Provisions for bad and doubtful debts may be written-off against receivables.
- Appraisal surplus may be written-off against fixed assets.
- Grants may be written back to net deficit.
- The amount due to BPDB and PGCB loans may be transferred to GOB loans.
- All GOB related balances may be transferred to GOB loans.
- Pension fund liabilities may be recognized.

As a result of these adjustments, the Government has to be prepared to write-off about US$ 528 million of losses incurred by DESA. BPI further proposes to convert the Government's remaining interest in DESA to equity. Following these measures in the process of corporatization, BPI projects that DESA could repay the current balance of foreign debt over 10 years and start to generate distributable profits.

4.2 Proposed financial restructuring measures

The financial restructuring is aimed at improving the financial position and the long-term viability of the power sector entities in Bangladesh. Although not all utilities are financially in trouble (PGCB and DESCO have financially relatively sound balance sheets), the restructuring of DESA's, BPDB's, WZPDC's and APSC's balance sheets will also impact on PGCB's and DESCO's financial position.

The financial restructuring basically involves the following measures

- the write-off of unrecoverable accounts receivable from private and public end-use customers to the utilities;
- the reconciliation and reduction of the inter-company accounts for electricity sales and purchase and wheeling services;
- transfer of Government loans to equity;
- the (partial) transfer of outstanding debt service liabilities (overdue interest and principal) for local and foreign loans to equity; and
- the possible relaxation of on-lending terms for the outstanding foreign loans;

During our work on the financial statements of the companies we have discovered a number of items that could be identified as unclear representation of the actual assets and liabilities of the utilities, causing distortions to the presentation of their financial situation. They are related to

- the presentation of the fixed assets in DESA's balance sheet;
- unresolved issues with respect to transfers of assets from one utility to the other;
- unfunded pension obligations and gratuities; and
- other accounting issues.

The activities on the financial restructuring of the balance sheets may be used to clarify and reconcile these items.

4.2.1 Accounts receivable from end-use customers

Accounts receivables are recorded in the Commercial Operation Statistics and in the financial accounting, however, the figures in the two sources differ widely and hence do not provide a clear picture.

The distribution companies have accumulated large amounts of uncollected receivables in their balance sheets which most likely will not be recoverable. Obviously un-collectable amounts have not been written-off and provisions for bad debt are not adequately considered in the balance sheets of DESA and BPDB.

For the financial restructuring we propose to adopt the following principles and activities:

- accounts receivable from end-use customers may be audited with the objective to identify un-collectable amounts – these amounts need to be written-off from the balance sheets;
- the accounts receivable used for the financial/accounting reports and the billing records maintained by the commercial operations department need to be reconciled;
- in accordance with prudent accounting practices the accounts receivable in the financial statements of the distribution companies may not reflect more than six

months billing at a collection rate of 90% for each group of the end-use customers:

- with respect to receivables from private customers (households, commercial, industrial) the balance in excess to this amount may be recognized in the provisions for bad and doubtful debts;
- with respect to government and semi-government customers the excess balance may be set-off against debt service liabilities.

In total the amount of end-use customers' receivables sums up to TK 23.5 billion. In general this figure reflects the weak performance of the billing and collection in some of the distribution companies. We would consider that a normal credit period in the Bangladesh context may not be longer than 60 days and we believe that a shorter period of not more than 45 days may be achievable. The present figures imply however, that the customers are in average two to five bills in array. As a general rule, customers may never be more than one bill in array, otherwise it becomes very difficult for them to oversee their debts, resulting in non-payment at all.

We therefore suggest reducing the accounts receivable to three months of billing. Based on the figures that we received from the financial accounting and the commercial operations department, we can only provide an estimate of the consequences of the balance sheets from the various companies. It shows that the total amount of end-use customers' debt to be written-off, set-off or recorded as provisions for bad / doubtful debt in the distribution companies sums up to TK13.25 billion. The consequences of this approach are detailed in Table 4-1.

With respect to the government and semi-government customers it may be useful to find a general agreement with the distribution companies in the context of the financial restructuring that electricity bills have to be paid within the normal period. In case of non-payment, the distribution companies may be allowed to off-set the unpaid amounts in excess of one month billing from their regular debt service payments for local or foreign loans.

Company	End-use Customer Accounts (TK million)	Balance Sheet 04/05	Write-offs / set -offs Provisions	restructured BS 2004/05
BPDB (excluding WZPDC)	AR from End Use Customers	10,391		10,391
	Provisions for Bad Debt	-769	-6,538	-7,307
	Impact on Equity			-6,538
WZPDC	AR from End Use Customers	2,791		2,791
	Provisions for Bad Debt	-176	-1,743	-1,919
	Impact on Equity			-1,743
DESA	AR from End Use Customers	8,032		8,032
	Provisions for Bad Debt	-1,478	-3,872	-5,350
	Impact on Equity			-3,872
DESCO	AR from End Use Customers	2,323		2,323
	Provisions for Bad Debt	0	-1,093	1,093
	Impact on Equity			-1,093
Total	AR from End Use Customers	23,538		23,538
	Provisions for Bad Debt	-2,423	-13,247	-13,483
	Impact on Equity			-13,247

Table 4-1: Treatment of receivables from end-use customers[8]

The following activities have to be undertaken:

- GoB needs to agree to the principles of treatment of receivables of end-use customers as outlined above;
- A consultant has to be appointed
  - to reconcile the commercial operation statistics and financial accounting report figures;
  - to identify receivables, which cannot be recovered, for write-off;
  - to undertake relevant corrections in the balance sheets of the companies as follows
    - receivables from private customers deemed to be recoverable to be kept in balance sheet / commercial operation statistics on the reconciled basis;
    - provisions for bad debt to cover all receivables from private customers in excess of three months billing;
    - Government and semi government debt in excess of three months billing to be set-off against debt service liabilities.

4.2.2 Inter-company accounts

The cross-debt between the utilities result from services for the sales of electricity from BPDB to the distribution companies and the provision of wheeling services of PGCB. In the FY 2004/05 the total receivables for inter-company services as recorded in BPDB's, APSC's and PGCB's balance sheets amount to a total of TK 41.8 billion, whilst at the same time the payables for such services are recorded across the sector with some TK 35.3 billion. 80% of this amount consist of debts from DESA to BPDB for bulk supply of electricity. The receivables of BPDB from DESA reflect some 40 months of sales (based on 2004/05 figures). It is unlikely that DESA

[8]) Figures consider that receivables in excess of three months billing are either written-off, set-off against DSL or recorded in provisions for bad debt.

will be in the position to repay this accumulated debt to BPDB – we therefore suggest to reduce the outstanding amount to a level of six months billing.

The amounts recorded in the balance sheets do not include interest on the overdue debts or penalties for late payment. If they would be considered DESA's surcharges would sum up to some TK 43.8 billion and hence more than double its debt against BPDB.

Receivables on one hand and payables on the other hand have only been reconciled between some companies, therefore reconciliation is of the amounts needs to be initiated across the whole sector. The activities may not be limited to the DESA – BPDB relation but as well include all other companies as well, with the exception of the relations between BPDB and DESCO and PGCB and DESCO.

The following activities need to be undertaken in the course of the restructuring:

- initiate reconciliation for the inter-company services (electricity purchase and wheeling),
- correct the accounts receivable and payable according to the reconciled figures and write-off the differences in the books of the respective companies;
- write-off to a level three months of billing:
  - DESA's payables to BPDB and PGCB; and
  - BPDB's payables to APSCL;
- write-off the difference of TK 11 million between the accounts payable of WZPDC and the receivables recorded BPDB's accounts;
- write-off the accounts receivable of TK 538 million recorded in BPDB's accounts for electricity delivered to EAU (EAU is an entity of BPDB);
- write-off the difference of TK 810 million between the accounts receivable from DESCO recorded in the books of DESA and the accounts payable to DESA recorded in the books of DESCO for electricity purchase;
- write-off the difference of TK 806 million recorded in the books of BPDB as accounts payable to PGCB for wheeling services which are not recorded in PGCB's books.

The inter-company accounts receivables and payables as stated in the balance sheets and the recommended restructuring measures are detailed in the Table 4-2.

We have not further investigated the accounts receivable/payable between BPDB and REB, PGCB and REB as well as DESA and REB for bulk supply and wheeling services. Nevertheless, we recommend that this may be included in the scope of the reconciliation works.

It is obvious that the lack of cash flow caused by non-payment of these inter-company services is one of the major problems in the power sector. The future structure of the power sector must deal with this situation and make sure that payment of bills amongst the companies is done within a normal payment period of not more than 45 days at the invoiced amount. We think that the Single Buyer in the role of the market operator can play a significant role in that respect and that sufficient credit support will have to be provided so that this function can be fulfilled. This will be discussed in section 5.4 later on in this report.

The required restructuring of the inter-company accounts result in a write-off of the receivable in total of TK 29.7 billion from the present level of TK 41.5 billion to TK 11.8 billion across the entire power sector. For BPDB the total accounts receivable for

inter-company services will be reduced from TK 36.7 billion by TK 30.9 billion to TK 5.8 billion. BPDB's debt service liabilities will be affected accordingly.

The impact on DESA's balance sheet is of course opposite. The reduction of its payables for bulk electricity purchase and wheeling services improves its financial position by some TK 28.1 billion.

Intercompany Accounts for bulk supply and wheeling services (TK million)					
Between Company:	affects:		Balance Sheet 04/05	Write-off	restructured BS 2004/05
APSC and BPDB	APSC	AR from BPDB for bulk generation (1)	1,773	-623	1,149
	BPDB	AP to APSC for bulk generation (2)	1,773	-623	1,149
BPDB and DESA	BPDB	AR from DESA for bulk supply	32,703	-30,314	2,389
	DESA	AP to BPDB for bulk supply	29,872	-27,483	2,389
BPDB and REB	BPDB	AR from REB for bulk supply	2,188	0	2,188
	REB	AP to BPDB for bulk supply		not recorded	
BPDB and DESCO	BPDB	AR from DESCO for bulk supply	714	0	714
	DESCO	AP to BPDB for bulk supply	714	0	714.162
BPDB and WZPDC	BPDB	AR from WZPDC for bulk supply	517	0	517
	WZPDC	AP to BPDB for bulk supply	528	-11	516.962
BPDB and EAU	BPDB	AR from EAU for bulk supply	538	-538	0
DESA and DESCO	DESA	AR from DESCO for bulk supply	1,407	-810	597
	DESCO	AP to DESA for bulk supply	597	0	597
DESA and REB	DESA	AR from REB for bulk supply	339	0	339
	REB	AP to DESA for bulk supply		not recorded	
PGCB and BPDB	PGCB	AR from BPDB for wheeling services	0	0	0
	BPDB	AP to PGCB for wheeling services	806	-806	0
PGCB and DESA	PGCB	AR from DESA for wheeling services	1,177	-887	290
	DESA	AP to PGCB for wheeling services	874	-583	290
PGCB and DESCO	PGCB	AR from DESCO for wheeling services	84	0	84
	DESCO	AP to PGCB for wheeling services	84	0	84
PGCB and WZPDC	PGCB	AR from WZPDC for wheeling services	61	0	61
	WZPDC	AP to PGCB for wheeling services	61	0	61
PGCB and REB	PGCB	AR from REB for wheeling services	360	0	360

(1) figures are based on 31.12.04 balance sheet of APSC
(2) figures are not reconciled with BPDB

Table 4-2: Cross-debt for inter-company services in the power sector before and after restructuring

4.2.3 Other inter-company accounts

The financial statements of the power sector entities show additional inter-company accounts that require closer considerations.

(a) DESA – accounts receivable from DESCO and REB

DESA records accounts receivable to DESCO and REB for customers handed over to them in the context of the transfer of DESA distribution areas of in total TK 2.183 million in its balance sheets. DESCO does not recognize these

accounts receivable in its balance sheet since they have not been considered in the Vendor's Agreement for the Gulshan Assets. Obviously DESCO and REB have only collected parts of these receivables from customers and transferred the collected amounts to DESA, as it is not clear how old these receivables are and to which customers they belong.

Therefore it is unlikely that these balances will be cleared. Consequently we suggest that the total amount of TK 2.183 billion may be written-off DESA's balance sheets.

In general, however, it may be recognized for future asset transfers that receivables represent an asset that has a certain value to the successor company which takes over the distribution assets. The value of the assets needs to be determined considering the procedures set out in Section 4.2.1 for the valuation of the existing accounts receivable and may be considered in the future Vendor's Agreements governing the asset transfers.

(b) WZPDC – accounts receivable inherited from BPDB

WZPDC records in its balance sheet the amount of TK 3.25 billion as accounts payable to BPDB for accounts receivable from end-use customers and government duty taken over from BPDB. In BPDB's preliminary balance sheet this transaction is not recorded.

Considering the plans to restructure BPDB and to split its distribution segment into three additional distribution companies, we think that the accounts receivable will be transferred to the successor companies as an asset. Collection of these receivables will remain with the successor companies and not be transferred to the BPDB Holding.[9]

This principle may as well apply to the transfer of receivables to WZPDC. We therefore suggest that the liabilities for the accounts receivable transferred from BPDB may be taken out of WZPDC's balance sheet, which on the other hand would increase BPDB's equity, by the amount of TK 3.25 billion.

(c) BPDB – unsettled amount on transfer of assets to REB

BPDB records in its balance sheet an unsettled amount for assets transferred to REB of TK 1.645 billion which is not recorded in REB's balance sheet. We suggest this balance to be cleared between REB and BPDB. If this is not possible, we propose to write it off against BPDB's equity.

(d) Inter-branch clearing accounts

BPDB and WZPDC show so-called "clearing accounts" reflecting the balances between the operating units and the head-office of the two companies at the level of TK 1.635 billion and TK 0.13 billion respectively. A similar account can be found in DESA's balance sheet under the name of "other assets." In both cases they seem to result from not reconciled intra-company cash transactions and therefore may have their origin in inaccurate reporting and book keeping. According to BDPB the balances cannot be verified and we therefore assume that they do not represent recoverable assets. In consequence we propose to write-off these accounts against equity.

[9]) See as well section 4.3.2 of this report

The measures together with their impact on the equity of the concerned companies are summarized in Table 4-3.

Other inter-company Accounts (TK million)						
	Between Company:	affects		Balance Sheet 04/05	Write-off	restructured BS 2004/05
(a)	DESA and DESCO / REB	DESA	Customer AR transferred to DESCO / REB Impact on DESA Equity	2,183	-2,183	0 -2,183
		DESCO	CAR transferred by DESA not recorded		no impact	
(b)	WPDC and BPDB	WZPDC	Customer AR transferred from BPDB Impact on WZPDC Equity	3,250	-3,250	0 3,250
		BPDB	Transaction not yet recorded Deduct WZPDC customer accounts receivable Impact on Equity		-2,791	-2,791
(c)	BPDB and REB	BPDB	Unsettled balance on transfer of assets Impact on BPDB equity	1,645	-1,645	0 -1,645
(d 1)	BPDB	BPDB	Write off of Clearing Accounts Impact on BPDB Equity	1,635	-1,635	0 1,635
(d 2)	WZPDC	WZPDC	Write off of Clearing Accounts Impact on WZPDC's Equity		-136	136
(d 3)	DESA	DESA	Write-off of Other Assets Impact on DESA Equity	2,233	-2,233	0 -2,233

Table 4-3: Clearing of other inter-company accounts

4.2.4 Fixed Assets

There are a number of issues related to the recording of assets in DESA's and BPDB's balance sheet which need to be resolved as a basis for further restructuring work. The details of the transactions are described in the following subsections and summarized in Table 4-4.

(a) Overstatement of asset value in DESA's balance sheets

The fixed assets of DESA's balance sheets shows a total value of TK 25.5 billion in the FY 2004/05. This is composed of TK 9.44 billion net assets in operation and TK 16.03 billion of project in progress.

According to DESA, work in progress is only transferred to the fixed assets when the approval for the finalization of the project has been given from the DESA management and relevant Government departments – a process which may require a period of more than one year. In consequence, assets that have been commissioned and are already in operation are still kept as work in progress in the books. Hence they have not depreciated.

Based on the financial statements for the years 1995 to 2005 we undertook a brief estimate of the revised asset value based on the following assumptions:

- additions to the work in progress recorded in DESA's balance sheets will be transferred to fixed assets as soon as they are in operation;
- the assumption for the transfer is that the average construction period for the assets will be some 1.5 years (since they are mainly distribution assets); and

- the assets are depreciated by an average rate of 3.21% p.a.

The result (see Table 4-4) represents only a brief estimate, which will later on form the basis for the restructured balance sheet for the financial model. In total some TK 14.1 billion may be transferred from Work in Progress to Gross Fixed Assets. The unrecorded deprecation is estimated to TK 1.4 billion and needs to be corrected against DESA's equity position by increasing the net deficit in DESA's balance sheet.

(b) BPDB: Write-off of transmission fixed assets still kept in BPDB's Balance Sheet

BPDB records transmission assets in its books at a net value of TK 7.7 billion. The value results from old transfers of transmission assets to PGCB and represents the figure that the transfer value has exceeded the book value. It needs to be written off from BPDB's fixed asset position in the balance sheet and corrected against its equity position (see Table 4-4, transaction (b)).

Further BPDB still handles ongoing transmission projects and records them in their balance sheet under Work in Progress at a value of TK 2.5 billion. The Work in Progress together with the related financing needs to be transferred to PGCB. We could achieve detailed clarification on the financing related to the transmission Work in Progress. Therefore we assume that it is partially financed by a Supplier's Credit from China for the RRAGS project (TK. 0.7 billion) and TK 1.8 billion by GOB loans. The impact of this transaction on BPDB's and PGCB's balance sheet are shown in Table 4-4(transaction (c)).

				Fixed Assets		
	Between Companies	Company affected		Balance Sheet 04/05	Write-off	restructured BS 2004/05
(a)	**DESA**	DESA	Transfer WIP to Fixed Assets in operation			
			Work in Progress	16,034	-14,123	1,911
			Gross Assets	16,513	14,123	30,636
			Accumulated Depreciation	-7,076	-1,382	-8,459
			Net fixed assets	9,437	12,741	22,178
			Impact on DESA equity			-1,382
(b)	**BPDB**	BPDB	Write-off Transmission Assets from Asset Register			
			Gross Assets	18,860	-18,860	0
			Depreciation	11,129	-11,129	0
			Net fixed assets	7,731	-7,731	0
			Impact on equity			-7,731
(c)	**BPDB - PGCB**		Transfer of WIP of Transmission Assets			
		BPDB	Work in Progress (April 06 BS)	47,977	-2,468	45,509
			Proposed Financing			
			Transfer of Suppliers Credit China	23,840	-673	23,167
			GOB Loans	22,382	-1,795	20,587
		PGCB	Transfer of WIP of Transmission Assets			
			Work in Progress	4,738	2,468	7,206
			Suppliers Credit			
			Transfer of Suppliers Credit China	763	673	1,436
			GOB Loans	641	1,795	2,436

Table 4-4: Correction of fixed assets in DESA's and BPDB's balance sheet

4.2.5 Unresolved issues related to transfers of transmission and distribution assets

In recent years transfers of fixed assets have been undertaken as a consequence of the efforts to restructure the power sector and to improve its efficiency. However, some of these transfers still contain some unresolved issues and the Government may use the opportunity of the financial restructuring to bring them to a resolution. The following subsections describe the transactions and make proposals for such resolutions. The related transactions and their impact on the balance sheets of the power sector entities are shown in Table 4-5 below.

(a) Transfer of the Gulshan distribution assets from DESA to DESCO:

There is a difference in the transfer value recorded in DESA and in DESCO for the Gulshan distribution assets. DESA apparently bases the recording in its balance sheets on a value of TK 4 billion and DESA reduced the book value of its assets accordingly. For financing it reduced its foreign and Government loans by the amount of TK 2.8 billion and increased its equity in DESCO by TK 1.2 billion. The loans have never been transferred formally to DESCO.

On the other hand, DESCO never accepted the transfer value of TK 4 billion. Based on its own engineering valuation, the value of the transferred assets may not be higher than TK 2 billion and reports it with this value in its balance sheets. It assumes that the transaction is financed only by the transfer of loans and does not report an increase of DESA's equity in DESCO. DESCO so far has not paid debt service for the financing of this transaction.

To us the basis for the transaction is not transparent. We could not receive detailed clarification from DESA on the transaction so that the above is not confirmed from DESA's accounting department.

This issue needs to resolved as soon as possible, since it represents a contingent liability to DESCO's and DESA's balance sheet.

For the purposes of this study we have made some assumptions, which finally need to be verified or revised as case may be:

- the assets may be transferred at the book value to DESCO[10];
- from the information available we estimate the book value to be approximately TK 2.8 million;
- the asset transfer as recorded in DESA's balance sheets needs to revoked, meaning
  - that DESA's net fixed asset value needs to be increased by the difference between the TK 4 billion and the assumed net asset value of TK 2.8 billion; and
  - that the financing assumptions in DESA's books need to be corrected by adding the TK 1.7 billion in foreign loans and TK 1.1 billion in Government loans back to DESA's accounts and by deducting the TK 1.2 billion from DESA's equity position in DESCO;
- instead we propose that the transfer of assets at the estimated TK 2.8 billion may be financed by a debt : equity portion of 50 : 50; by
  - transferring TK 1.4 billion in foreign loans from DESA to DESCO; and
  - increasing of DESA's equity in DESCO by TK 1.4 billion;

This needs to be reflected back to back in DESCO's balance sheet.

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[10]) DESA does not entertain an asset register and therefore the book value needs to be determined based on previous recordings available in

The transfer of foreign loans needs to be formalized so that DESCO enters in a relevant subsidiary loan agreement with the Government covering the TK 1.4 billion.

(b) Transfer of transmission assets from DESA to PGCB

DESA transferred a part of their transmission equipment to PGCB at a value of TK 4.36 billion in the year 2003. There seems to be no dispute on the value of these assets, but there is a minor difference of TK 0.1 billion between the records in DESA's and PGCB's books, which needs to be corrected.

The asset transfer was financed on the side of DESA by

- TK 1.9 billion in foreign loans;
- TK 1.7 billion in Government loans; and
- TK 0.9 billion in debt service liabilities.

No loan agreements have been formally transferred to PGCB. PGCB records them as assigned loans in their books and calculates them with 5% interest and a repayment period of 20 years. PGCB stop servicing any of the loans because of DESA's non-payment of PGCB's wheeling services.

We suggest reconsidering the financing of the asset transfer and – due to the relatively bad capitalization of PGCB - transfer them with a debt : equity proportion of 50 : 50.

The 50% debt portion is considered to be foreign debt. The related foreign loans may be transferred formally under one single consolidated subsidiary loan agreement with the Government.

(c) Transfer of the remaining transmission asset from DESA to PGCB

Presently DESA still owns the 132 kV transmission assets in the Dhaka supply area. We understand that there has been a Government decision to transfer these assets to PGCB and that preparatory works for the transfer are already on the way.

Since DESA does not entertain an up to date asset register, it will be necessary to determine the value of the assets based on project documentation maintained by DESA. We have received a list of transmission assets from DESA which will be subject to transfer and discussed the list with PGCB. Some TK 2.4 billion where considered to be a reasonable transfer value based on previous experience.

For our purposes we assumed that the transfer would be conducted under similar circumstances like mentioned in Section (b) above at a debt : equity proportion of 50 : 50 and that the 50% debt portion is considered to be foreign loans. The loan transfer may be formalized from the beginning so that PGCB enters into a subsidiary loan agreement with the Government representing the consolidated foreign loans.

(d) Transfer of transmission assets from BPDB to PGCB

Between 1999 and 2003 the transmission assets of BPDB where gradually handed over to PGCB. Ultimately these assets where valued at book value or at project cost.

The foreign and the Government loans related to the transferred assets, however, had not been transferred to PGCB formally. Presently PGCB keeps them in their books as "assigned" loans (as it is done with the DESA loans).

BPDB on the other hand does not record them anymore in their balance sheet although it kept record of them in their loan administration.

PGCB assigned a 5% interest and a 20 year repayment period to the total amount of the assigned loans from BPDB. However, debt service payment where not paid on this basis. It seems that PGCB amortizes the assigned loans against the (unpaid) invoices from BPDB. Therefore the loan amounts and debt service liabilities for these loans as recorded in BPDB's loan administration is do not match the figures reported in PGCB's balance sheet as "BPDB assigned loans".

We therefore suggest the following:

- The foreign "assigned" loans in PGCB's balance sheets may be reconciled with BPDB's loan administration figures, since these seem to reflect the status of the loans in the Government recordings;
- this means that the outstanding amount of TK 15.1 billion of foreign loans (including a suppliers credit of TK 2.9 billion) may be corrected in such way, that the difference to BPDB's loan administration (approximately TK 4.8 billion) is transferred to debt service liabilities;
- from the remaining amount of TK 10.3 billion some TK 7.4 billion are foreign loans lent-on from the Government to PGCB; and
- this amount – although resulting from various loans – may be consolidated under one subsidiary loan agreement between the Government and PGCB.

(e) Transfer of generation assets from BPDB to APSCL

Together with the transfer of the generation assets to APSCL, BPDB assigned TK 4.5 billion of foreign loans and Government loans of TK 0.4 billion to APSCL. The loans have not formally been transferred like in all the other cases where asset transfers have taken place.

In line with the recommendations above, we suggest, that the on-lent foreign loans and the Government loans assigned to APSCL are consolidated in a single loan and that APSCL enters into a subsidiary loan agreement for the foreign and a loan agreement for the local loans.

This has no impact on the balance sheets of APSCL and BPDB.

Unfinalized Transfers of Fixed Assets across the Sector (TK million)						
	Between Company	Affected Company		Balance Sheet 04/05	Add / Write-off	restructured BS 2004/05
(a)	**DESA - DESCO**	**Transfer of Gulshan Distribution Assets**				
		DESA	Gross Assets	16,513	1,785	18,299
			Accumulated Depreciation	-7,076	607	-6,469
			Net fixed assets	9,437		11,829
		DESCO	Gross Assets	5,451	823	6,274
			Accumulated Depreciation	-938	0	-938
			Net fixed assets	4,513		5,336
		DESA	Financing related to asset transfer			
			Revoke transferred Foreign Loans	1,696	-1,696	0
			Revoke DSL / GOB Loans	1,108	-1,108	0
			Revoke investment / equity in DESCO	1,196	-1,196	0
			New Proposed Financing			
			Transfer of Foreign Loans	0	1,411	1,411
			DESA equity in DESCO	0	1,411	1,411
		DESCO	Financing related to asset transfer			
			Revoke Loan from DESA	1,999	-1,999	0
			Add as new financing			
			Equity	0	1,411	1,411
			Foreign loan	0	1,411	1,411
(b)	**DESA - PGCB**	**Transfer of DESA's Transmission Assets**				
		DESA	Revoke the assumed financing			
			Revoke transferred Foreign Loans	1,851	-1,851	0
			Revoke GOB Loans	1,683	-1,683	0
			Revoke DSL	831	-831	0
			New Proposed Financing			
			Equity in PGCB	0	2,182	2,182
			Foreign Loan	0	2,182	2,182
		PGCB	Impact of new financing			
			Equity contribution from DESA		2,182	2,182
			Foreign Loan		-2,182	-2,182
(c)	**DESA - PGCB**	**Transfer 132 kV transmission system from DESA to PGCB's ownership**				
		DESA	Gross Assets	16,513	-2,391	14,122
			Accumulated Depreciation	-7,076	1,235	-5,841
			Net fixed assets	9,437	-1,156	8,281
			Revaluation Profit	0	1,212	1,212
			New Proposed Financing			
			Equity in PGCB		1,184	
			Transfer of foreign loan to PGCB		1,184	
		PGCB	Gross Assets		2,368	
			New Proposed Financing			
			Equity		1,184	
			Foreign Loans		1,184	
(d)	**BPDB - PGCB**	**Transfer of Transmission Assets (Foreign Loans - DSL)**				
		PGCB	BPDB assigned loan	15,073	-4,751	10,322
			(of which Suppliers Credit)			*2,898*
			Transfer to DSL according to BPDB Loan administration		4,751	

Table 4-5: Unresolved issues related to recent transfers of distribution and transmission assets

4.2.6 Unrecorded Pension Obligations

BPDB and DESA both have significant pension obligations which are not properly reflected in their balance sheets. The transfer or retrenchment of employees from BPDB and DESA to successor companies will require the settlement of accrued pension funds.

To determine the level of the unrecorded pension obligations we used the case of PGCB where the transfer of some 1,270 employees was involved. The cost related to their transfer was at TK 378,000 per employee. For our estimates we have added the average increase of salaries to date of some 8.7% to this amount, which results in average cost of TK 410,865 per employee.

Based on this figure and the number of full time employees the recorded pension and gratuity obligations may be at TK 8.74 billion (or 136.7 million US$). In total this comprises some 18,000 full time employees at BPDB (including those who have been transferred to WZPDC) and some 3,300 full time employees at DESA.

Unrecorded Liabilities for Pensions and Gratuities (TK million)					
			Balance Sheet 04/05	add	restructured BS 2004/05
(a)	**BPDB**	Increase of provisions for unfunded pension and gratuity	1,776	5,613	7,388
		Impact on equity			-5,613
(b)	**DESA**	Increase of provisions for unfunded pension and gratuity	104	1,243	1,347
		Impact on equity			-1,243

Table 4-6: Unrecorded Liabilities for Pensions and Gratuities

It needs to be noted that the exact amount of the total pension and gratuity related liabilities is not known at DESA and BPDB and therefore there is urgent need to identify and determine these figures. GoB therefore may initiate actuarial / audit work on this subject on an immediate basis.

4.2.7 Other Balance Sheet Items

There are a number of other, minor items in the balance sheets of the power sector entities that require reconciliation and/or correction. They are listed in the following subsections and summarized in Table 4-7 below :

(a) BPDB Loan to APSCL

APSCL's balance sheet records a BPDB loan of TK 225 million. It is unclear to us what this loan represents and there is obviously no formal loan agreement that details the conditions (repayment period, interest) for this loan. We therefore suggest transferring it to equity.

(b) Exchange Rate Losses at APSCL

APSCL did not record any exchange rate losses for the foreign loans assigned to them by BPDB. For purpose of comparability with the other companies and to achieve a common starting point for the financial projections, we have estimated the foreign exchange rate losses up to the 30 June 2006. The estimated amount of exchange rate losses is TK 0.9 billion. Consequently we have increased the TK amount of foreign loans from TK 4.5 billion to TK 5.4 billion. At the same time we reduced APSCL's equity by the same amount.

(c) Impact of Exchange Rate on DESCO's Balance Sheet

The preliminary financial statement of DESCO uses a slightly different exchange rate than the other power sector entities (1 US$ = 64 TK instead of 1 US$ = 63.9 TK). The impact of the adjustment of the exchange rate on foreign loans is TK 12 million.

(d) Reconciliation of financing to BPDB's books

BPDB records slightly different figures related to its equity and the loans assigned to WZPDC. The difference is Tk 14 million and may be reconciled in WZPDC's balance sheet.

(e) Foreign Loan Balance in BPDB's books

BPDB's balance sheet records outstanding foreign loans of TK 28.788 billion (including the current portion). The information received from BPDB's loan administration shows a figure of TK 28.592 billion. A review of the loan balances from the BPDB figures showed that there are some small computational errors mostly related to the application of wrong exchange rates.

In total the differences between the balance sheet figure and the corrected loan administration figure is TK - 550 million. We have added this difference to the unpaid debt service liabilities.

(f) WZPDC – Claim to BPDB

WZPDC records a Claim to BPDB of TK 215 million against consumer security and against contractor and supplier security. The claim is not reported in BPDB's balance sheet. We suggest to resolve the issue by setting-off the Claim against debt service liabilities.

Other items (TK million)			Balance Sheet 04/05	Write-off	restructured BS 2004/05
(a) BPDB - APSCL	BPDB	Loan to APSCL	225	-225	0
		Increase BPDB's Equity in APSCL	1,188	225	1,413
	APSCL	Loan from BPDB	225	-225	0
		Increase BPDB's Equity in APSCL	1,188	225	1,413
(b) APSCL	APSCL	Add Exchange Rate Losses 31.12.04 - 30.06.05 to FL			
		Foreign Loans	4,483	922	5,405
		Impact on Equity			-922
(c) DESCO	DESCO	Impact of different Exchange Rate on FL			
		Foreign Loans	2,227	-12	2,215
		Impact on Equity			12
(d) BPDB - WZPDC	WZPDC	Reconcile financing to BPDB's books			
		Equity			(14)
		Foreign Loans			14
(e) Foreign Loans	BPDB	Foreign Loan Balance in BPDB's books incorrect			
		Foreign Loans	28,788	-550	28,238
		Difference is transferred to DSL			550
(f) WZPDB - BPDB	WZPDC	Claim to BPDB	215	-215	0
		set-off against DSL			-215

Table 4-7: Other Balance Sheet Items

4.2.8 Transfer of DESA's equity in DESCO and PGCB to a Sector Holding

Following the financial analysis of the balance sheets according to the above sections 4.2.1 to 4.2.8, DESA holds equity in DESA and PGCB of in total TK 4.9 billion. According to the Government plans of the restructuring of the power sector, this equity will be transferred to a sector holding to be created out of BPDB that will be the sole owner of all power sector entities. We therefore assume that DESA's equity portion in PGCB and DESCO will be transferred to BPDB. In turn the paid-in capital of DESA will be increased by the same amount, as shown in Table 4-8.

Transfer of Investment of DESA to BPDB (TK million)					
	Affected Company		Balance Sheet 04/05		restructured BS 2004/05
(a) DESA - BPDB	DESA	Equity in DESCO transferred to BPDB	1,561	-1,561	0
		Impact on Equity			-1,561
	BPDB	Investment of BPDB in DESCO	0	1,561	1,561
		Impact on Equity			1,561
(b) DESA - PPDB	DESA	Equity in PGCB transferred to BPDB	3,366	-3,366	0
		Impact on Equity			-3,366
	BPDB	Investment of PGCB in DESCO	0	3,366	3,366
		Impact on Equity			3,366

Table 4-8: Transfer of DESA investment in PGCB and DESCO

4.2.9 Treatment of Long-term Debt

Following the restructuring of the balance sheets according to the above sections 4.2.1 to 4.2.8, the debt : equity ratio for the sector entities is as follows:

- BPDB: 75%;
- DESA: 103%;
- DESCO: 72%;
- PGCB: 75%;
- APSCL: 101%; and
- WZPDC: 88%.

The long-term debts comprise the outstanding balances of foreign and Government loans as well as the unpaid and overdue debt service liabilities. Mainly DESA and BPDB have accumulated such debt service liabilities (BPDB: TK 52.3 billion and DESA: TK 11.2 billion). Other companies have inherited debt service liabilities as part of the spin-off from BPDB (APSCL: TK 10.1 billion and WZPDC TK 4.1 billion).

Considering the required investment plans of the power sector entities and the necessity to improve their performance we are of the opinion that the capitalization of the power sector is not sufficient even for those companies with a satisfactory present financial performance. We therefore suggest granting a relief from the present debt burden to all of the existing power sector entities. In the international context a debt to equity proportion of 70% to 30% in the power sector would be reasonable. However, considering the specific situation in Bangladesh, we recommend to set a target debt to equity proportion of 60% to 40% as a starting point that will create a sustainable

basis for future operations. Compared to international standards this will leave sufficient breathing space to the companies during the financial recovery period.

To achieve this, the following principles are applied:

- the unpaid and overdue debt service liabilities are transferred to equity to the extent required to achieve the target debt : equity ratio of 60 : 40;
- the remaining debt service liabilities (if applicable) may then be transferred into government loan;
- if the unpaid and overdue debt service liabilities are not sufficient to achieve the 60 : 40 debt : equity ratio, the existing Government loans shall be used as balance.

The results of the transaction are shown in Table 4-9 below. It shows that inmost cases nearly all DSL is converted to equity and only smaller portions are converted to local loans. The only exception is BPDB where only 40% of the DSL needs to be converted to equity to achieve the desired debt : equity ratio.

	Amount required for transfer to Equity (4)	Unpaid and overdue amount of DSL	DSL transferred to local loan	Local Loan transferred to Equity
DESA	12.1	11.2	--	0.9
BPDB	22.5	57.3	34.8	--
WZPDC	2.7	4.1	1.4	--
APSC (1)	6.1	10.1	4.0	--
PGCB (2)	5.7	6.3	0.6	---
DESA (3)	1.0	---	--	1.0

(1) DSL inherited from BDPB

(2) DSL of PGCB results from reconciliation of the outstanding amounts of assigned loans balance as the difference between BPDB and Government and the recorded amounts and the amounts recorded at PGCB.

(3) DESA has no DSL therefore the balance to achieve the 60 : 40 debt : equity ratio needs to be taken from outstanding Government loans.

(4) This amount is required to be converted from debt to equity to achieve the 60 : 40 debt : equity rato.

Table 4-9: Proposed conversion of unpaid DSL and Government loans to equity

To allow for reasonable financial planning, the remaining local loans may be consolidated and formalized. This can be achieved by

- entering into one single loan agreement for the remaining DSL and Government loans; or
- by entering into two different loan agreements one for the outstanding Government loans and the other for the outstanding (not converted) debt service liabilities.

The advantage of creating two loan agreements might be that a loan resulting from the conversion of unpaid debt service liabilities might be of lower priority than the outstanding Government and foreign loans. In case of a new shortfall of liquidity, this loan may be served only after debt service for the foreign loans and the Government loans has been paid.

As conditions for this consolidated Government loan(s) we propose to apply the normal lending conditions of the Government of Bangladesh with a fixed interest rate of 5% and a repayment period of 15 years.

These are clearly no commercial loan terms, which would require interest rates of 12% and above according to the present level of borrowing on the local capital market. However, such commercial loan terms would require additional tariff increases, which - considering the present quality of supply – are considered not to be acceptable by the Government.

With respect to the foreign loans, it is suggested that the loan balances are retained by the sector entities. We propose to use an arrangement similar to the one for the Government loans. All loans from donor agencies, which are presently under repayment, may be consolidated under one on-lending arrangement between the Government and the sector entities with similar conditions than for the local loans (Interest rate of 5% and 15 years repayment). Otherwise the debt service profile of the foreign loans according to the existing subsidiary loan agreements would impose high constraints on the cash flow of the utilities.

4.3 Impact on the balance sheets of the power sector entities

The following shows the balance sheets of the existing power sector entities after the application of the financial restructuring measures shown in section 4.2 above.

4.3.1 BPDB

The impact of the proposed financial restructuring on BPDB's balance sheet is significant. The most important transactions are

- the reduction of the accounts receivable from TK 59.6 billion to TK 16.8 billion (considering the provisions for bad debt);
- the reduction of the asset base due to the transfer of transmission projects in progress and the write-off of the transmission assets in BPDB's balance sheet, which in total reduced the asset base by TK 10.2 billion; and
- the transfer reduction of the long term debt of BPDB from TK 103.5 billion (including unpaid debt service liabilities of TK 57.3 billion) to 77.7 billion.

BPDB Balance Sheet 30.06.2005	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	179,852		18,860	160,992
Depreciation	-104,106		-11,129	-92,977
Fixed Assets net value	75,746		7,731	68,015
Project in Progress	47,977		2,468	45,509
Total fixed assets	**123,723**			**113,523**
Investment	12,914	5,152		18,066
Investments	**12,914**			**18,066**
Current assets				
Stocks and stores	8,233			8,233
Cash and banks	15,457			15,457
Accounts receivable end use customers	13,182		2,791	10,391
Accounts receivable IntCo	36,661		30,852	5,809
Accounts receivable others	8,153		225	7,928
Account receivable others / REB	1,645		1,645	0
Provision for bad debts	-769		6,538	-7,307
Advances from Suppliers	794			794
Advances to Employees	1,156			1,156
Deposits and Pre-Paid Expenses	73			73
Total current assets	**84,585**			**42,534**
Total assets	**221,222**			**174,123**
Liabilities				
Paid in capital	77,128	55,170	36,795	58,753
Revaluation reserve	55,748	55,748		0
Retained earnings, etc.	-53,566	-53,566		0
Total capital & reserves	**79,311**			**58,753**
Customer deposits (security)	2,022			2,022
GPF/CPF	1,776		5,613	7,388
Pensionfund	18			18
Grant	4,120	4,120		0
Deposit Works Fund	1,006			1,006
Total provisions	**8,941**			**10,433**
Government loans	22,382	27,790	57,828	52,421
Foreign loans	23,840	3,508	4,948	25,280
Total long term liabilities	**46,222**			**77,701**
Accounts payable	11,344	1,430		9,914
Accounts payable energy	7,660			7,660
Accounts payable material	2,203			2,203
Current portion of lt liabilities (foreign)	4,948	4,948	2,285	2,285
Current portion of lt liabilities (local)	0		3,495	3,495
Security deposit contractors	641			641
Reimbursable Proejct Aid	763			763
Debt servicing liabilities (principal)	24,312	24,862	550	0
Debt servicing liabilities (interest)	32,966	32,966		0
Other s.t. liabilities	276			276
Total short term liabilities	**85,113**			**27,236**
Clearing Accounts	**1,635**	1,635		0
Total liabilities	**221,222**			**174,123**
Debt/equity ratio	**59**			**60**
Current ratio 1:	**0.99**			**1.56**
Quick ratio (estimated) 1:	**0.91**			**1.53**

Table 4-10: Impact of financial restructuring on BPDB's Balance Sheet

4.3.2 Ashuganj Power Station Company

APSC's management has decided to use a different Financial Year than the other entities in the power sector. For purposes of comparability, common information basis and for regulatory purposes this may be changed to a FY starting 01 July and ending 30 June the following year as for all the other sector entities.

APSCL Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	15,279			15,279
Depreciation	-1,416			-1,416
Fixed Assets net value	13,863			13,863
Project in Progress	0			0
Total fixed assets	**13,863**			**13,863**
Intangible assets	**0**			
Stocks and stores	889			889
Cash and banks	50			50
Accounts receivable BPBD	1,773		623	1,149
Accounts receivables other customers	0			0
Other s.t. assets	4			4
Provision for bad debts	0			0
Total current assets	**2,716**			**2,093**
Total assets	**16,580**			**15,956**
Liabilities				
Paid in capital (BPDB)	1,188	1,546	6,361	6,004
Revaluation reserve	0			0
Retained earnings, etc.	3	3		0
Total capital & reserves	**1,191**			**6,004**
Grants	0			0
Security deposits contractors	6			6
Provision for Income Tax	2			2
Deposit Work Fund				0
GPF & CPF & pension fund	0			0
Total provisions	**8**			**8**
Government loans	319	6,416	10,059	3,962
Foreign loans	4,483	369	922	5,036
DSL (from BPDB)	10,059	10,059		0
Total long term liabilities	**14,861**			**8,998**
Accounts payable	0			0
Current portion of lt liabilities (foreign)	0		369.109	369
Current portion of lt liabilities (local)	0		283	283
Arrear salary & allowance for 2003	110			110
Arrear salary & allowance for 2004	174			174
Loan from BPDB	225	225		0
Other s.t. liabilities	10			10
Total short term liabilities	**519**			**946**
Total liabilities	**16,579**			**15,956**
Debt/equity ratio	**93**			**60**
Current ratio	**5.23**			**2.21**
Quick ratio	**3.52**			**1.27**

Table 4-11: Impact of financial restructuring on APSCL's Balance Sheet

For our purposes we have used APSC's balance sheet dated 31.12.2004. To achieve the target debt to equity ratio of 60% to 40% it is necessary to transfer of the TK 10.6

billion of debt service liabilities – inherited by APSC from BPDB in the context of the spin-off of the generation assets - some TK 6.13 billion to equity. The remaining amount will be transferred to local loans. The total amount of local loans will be at TK 4.25 billion.
The foreign loans assigned to APSC in the context of the spin-off amount to TK5.41 billion (including current portion) and consist to the largest extent of three KfW loans and one IDA loan that have been lend on to BPDB at an 11.5 % interest rate. Repayment of these loans will end within the coming three to five years.

4.3.3 PGCB

As already mentioned in the analysis of the financial status of the existing power sector entities, PGCB's financial performance is presently quite satisfactory. However, the debt :equity ratio in PGCB is 80:20 at the end of the financial year 2004/05 which is certainly at the very low end of the range of debt : equity ratios in utilities elsewhere on the world. Further PGCB did not pay full debt service payment for the loans assigned to it during the transfer of the transmission assets from BPDB and DESA. In addition it needs to be taken into account that PGCB is facing a significant investment program to cater for network expansion and improvement of security of supply and reliability. Furthermore, PGCB is affected by the reduction of the accounts payable from DESA to PGCB for unpaid wheeling services exceeding three months of billing.

For theses reasons PGCB's Balance Sheet was restructured as well, mainly with the objective to reduce its debt burden and decrease the debt : equity ratio to 60: : 40, as shown in Table 4-12.

In total the debt burden on PGCB has been reduced from TK 24.7 billion to TK 20.8 billion, whereby the second figure includes the loans from the BPDB related to the ongoing Work in Progress transferred to PGCB and the debt portion related to the financing of the transfer of the 132 kV transmission network from DESA to PGCB.

PGCB Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	51,299	2,368		53,667
Depreciation	-26,712			-26,712
Fixed Assets net value	24,588			26,956
Project in Progress	4,738	2,468		7,206
Total fixed assets	**29,325**			**34,161**
Intangible assets	**1**			**1**
Stocks and stores	565			565
Cash and banks	3,914			3,914
Accounts receivables DESA	1,177		887	290
Accounts receivables DESCO	84			84
Accounts receivables WZPDCL	61			61
Accounts receivables PBS and RPCL	360			360
Accounts receivable others	63			63
Other s.t. assets	394			394
Total current assets	**6,619**			**5,732**
Total assets	**35,945**			**39,894**
Liabilities				
Paid in capital	6,268	887	9,627	15,008
Revaluation reserve	0			0
Retained earnings, etc.	497	497		0
Total capital & reserves	**6,765**			**15,008**
Grant from SIDA	26	26		0
Provision for gratuity	166			166
Deferred Income Taxes	143			143
Total provisions	**336**			**309**
Government	1,635	6,015	8,274	3,894
BPDB assigned loans	13,899	9,184	1,174	5,889
DESA assigned loans	4,263	2,182	1,184	3,265
Foreign loans :ADB and others	4,494	734		3,760
Loans/credits from suppliers	388		3,571	3,959
Other long term liabilities	52	52		0
Exchange Rate Losses	1,448			1,448
Total long term liabilities	**26,179**			**22,215**
Accounts payable	434			434
Current portion of lt liabilities (foreign)	1,174	1,174	1,535	1,535
Current portion of lt liabilities (local)	70	70	278.178	278
Debt servicing liabilities (principal)	0	4,751	4,751	0
Debt servicing liabilities (interest)	872	1,606	734	0
Other s.t. liabilities	115			115
Total short term liabilities	**2,665**			**2,362**
Total liabilities	**35,945**	32,015	32,015	**39,894**
Debt/equity ratio	**80**			**60.0**
Current ratio	**2.48**			**2.43**
Quick ratio	**2.27**			**2.19**

Table 4-12: Impact of financial restructuring on PGCB's Balance Sheet

4.3.4 DESA

Before financial restructuring DESA was technically insolvent. Its balance sheet required significant cleaning to represent an approach to a picture of the realistic financial status of the company.

DESA holds equity in DESCO, which according to the plan of the Government of Bangladesh will be transferred to a sector holding (the “BPDB Holding”). This is considered in the restructuring exercise.

The biggest impact on DESA’s balance sheet results from:

- the reduction of the accounts payable to BPDB and PGCB, reducing the liabilities to these two companies from TK 30.7 billion to TK 2.7 billion;
- the write-off / set-off / provisions of the receivables from TK 13.1 billion to TK 6.0 billion;
- the reduction of the long-term debt against the Government of Bangladesh from TK 25.0 billion (incl. unpaid debt service obligations) to TK 14.9 billion.

The DESA - after restructuring of its balance sheet - shows a positive equity of some TK 11.2 billion and achieves a debt : equity ratio of 60 : 40. The current ratio and the quick ratio improve from 0.41 to 1.32 and from 0.42 to 1.90 respectively.

The restructured balance sheet (before and after the transfer of the DESCO equity to the BPDB holding) is shown in Table 4-13.

DESA Balance Sheet 30.06.2005							
desription	original million Tk	Dt	Cr	restructured million Tk			under holding million Tk
Balance sheet							
Assets							
Fixed Assets gross value	16,513	15,908	2,391	30,031			30,031
Depreciation	-7,076	-1,989	-1,235	-7,831			-7,831
Fixed Assets net value	9,437			22,200			22,200
Project in Progress	16,034		14,123	1,911			1,911
Total fixed assets	**25,472**			**24,111**			**24,111**
Shares etc.	2,232	4,777	1,196	5,813		4,927	886
Investments	**2,232**			**5,813**			**886**
Stocks and stores	1,158			1,158			1,158
Cash and banks	2,259			2,259			2,259
Accounts receivables from customers	8,032			8,032			8,032
Accounts receivable from DESCO	1,407		810	597			597
Accounts receivable REB	339			339			339
Account receivable others	3,342		2,183	1,159.756			1,160
Other s.t. assets	3,500		2,233	1,267.468			1,267
Provision for bad debts	-1,478		3,872	-5,350			-5,350
Total current assets	**18,561**			**9,464**			**9,464**
Total assets	**46,264**			**39,388**			**34,461**
Liabilities							
Paid in capital	11,340	43,898	35,287	2,730	4,927	13,427	11,230
Revaluation reserve	5,995	7,207	1,212	0			0
Retained earnings, etc.	-32,175		32,175	0			0
Total capital & reserves	**-14,840**			**2,730**			**11,230**
Customer deposits (security)	1,369			1,369			1,369
GPF/CPF	93			93			93
Pensionfund	104		1,243	1,347	1,347		0
Grant	14	14		0			0
Deposit Works Fund	476			476			476
Total provisions	**2,056**			**3,285**	**1,938**		
Government loans	6,746	1436	14,794	20,104	12,711	1,436	8,830
Foreign loans	7,063	5,362	4,375	6,077			6,077
Total long term liabilities	**13,809**			**26,181**			**14,907**
Accounts payable	670			670			670
Current portion of lt liabilities (foreign)	829	829	584	584			584
Current portion of lt. Liabilities (local)	0		1436	1,436	1,436	631	631
Accounts payable to BPDB	29,872	27,483		2,389			2,389
Payable to PGCB	874	583		290			290
Debt servicing liabilities (principal)	2,645	4,584	1,939	0			0
Debt servicing liabilities (interest)	8,528	8,528		0			0
Other s.t. liabilities	1,822			1,822			1,822
Total short term liabilities	**45,239**			**7,192**			**6,386**
Total liabilities	**46,264**	**118,619**	**118,619**	**39,388**			**34,461**
Debt/equity ratio	**222**			**92**			**60**
Current ratio 1:	**0.41**			**1.32**			**1.48**
Quick ratio (estimated) 1:	**0.42**			**1.90**			**2.14**

DESA Balance Sheet 30.05.2006							
desription	original million Tk	Dt	Cr	restructured million Tk			under holding million Tk
Balance sheet							
Assets							
Fixed Assets gross value	16,513	15,908	2,391	30,031			30,031
Depreciation	-7,076	-1,989	-1,235	-7,831			-7,831
Fixed Assets net value	9,437			22,200			22,200
Project in Progress	16,034		14,123	1,911			1,911
Total fixed assets	**25,472**			**24,111**			**24,111**
Shares etc.	2,232	4,777	1,196	5,813		4,927	886
Investments	**2,232**			**5,813**			**886**
Stocks and stores	1,158			1,158			1,158
Cash and banks	2,259			2,259			2,259
Accounts receivables from customers	8,032			8,032			8,032
Accounts receivable from DESCO	1,407		810	597			597
Accounts receivable REB	339			339			339
Account receivable others	3,342		2,183	1,159.756			1,160
Other s.t. assets	3,500		2,233	1,267.468			1,267
Provision for bad debts	-1,478		3,872	-5,350			-5,350
Total current assets	**18,561**			**9,464**			**9,464**
Total assets	**46,264**			**39,388**			**34,461**
Liabilities							
Paid in capital	11,340	43,898	35,287	2,730	4,927	13,427	11,230
Revaluation reserve	5,995	7,207	1,212	0			0
Retained earnings, etc.	-32,175		32,175	0			0
Total capital & reserves	**-14,840**			**2,730**			**11,230**
Customer deposits (security)	1,369			1,369			1,369
GPF/CPF	93			93			93
Pensionfund	104		1,243	1,347	1,347		0
Grant	14	14		0			0
Deposit Works Fund	476			476			476
Total provisions	**2,056**			**3,285**	**1,938**		
Government loans	6,746	1436	14,794	20,104	12,711	1,436	8,830
Foreign loans	7,063	5,362	4,375	6,077			6,077
Total long term liabilities	**13,809**			**26,181**			**14,907**
Accounts payable	670			670			670
Current portion of lt liabilities (foreign)	829	829	584	584			584
Current portion of lt. Liabilities (local)	0		1436	1,436	1,436	631	631
Accounts payable to BPDB	29,872	27,483		2,389			2,389
Payable to PGCB	874	583		290			290
Debt servicing liabilities (principal)	2,645	4,584	1,939	0			0
Debt servicing liabilities (interest)	8,528	8,528		0			0
Other s.t. liabilities	1,822			1,822			1,822
Total short term liabilities	**45,239**			**7,192**			**6,386**
Total liabilities	**46,264**	**118,619**	**118,619**	**39,388**			**34,461**
Debt/equity ratio	**222**			**92**			**60**
Current ratio 1:	**0.41**			**1.32**			**1.48**
Quick ratio (estimated) 1:	**0.42**			**1.90**			**2.14**

Table 4-13: Impact of financial restructuring on DESA's Balance Sheet

4.3.5 DESCO

DESCO showed a strong financial performance in the Financial Year 2004/05 and achieved a return on net fixed assets of nearly 20% and a return on equity of above 43%. Compared to the other distribution companies and as well in international terms this represents an outstanding result. However, it needs to be noted that DESCO's balance sheet identifies the unresolved transfer of the Gulshan distribution assets and the related financing as a contingent liability that – when resolved – will affect their financial statements significantly. In addition to that DESCO appears to be not well capitalized with a debt : equity ratio of some 76 : 24 %.

Besides the fact that DESCO has been in the position to improve its operational performance significantly compared to the other distribution segments, it certainly benefits from the situation, that it covers a relatively new supply area with high specific consumption per customer and low specific cost of supply. At the same time the average revenues per sold kWh are highest in Bangladesh – see as well the analyses in Sections 6.3.4 and 6.4.2 of this report. Given the situation in the overall power sector, this advantages will have to be either shared with the other distribution companies or passed on to the consumers. It is hardly possible that similar rates of return on net fixed assets and on equity will prevail for much longer.

For this reason, the balance sheet of DESCO has as well been considered for restructuring. In total the debt restructuring required to achieve a debt : equity ratio of 60:40 is some TK 1.1 billion, reducing the outstanding long term debt from TK 5.6 billion to TK 4.5 billion.

The restructured balance sheet is shown in Table 4-14.

DESCO Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
BALANCE SHEET				
Assets				
Fixed Assets gross value	5,451	823		6,274
Depreciation	-938			-938
Fixed Assets net value	4,513			5,336
Project in Progress	0			0
Total fixed assets	**4,513**			**5,336**
Intangible assets	**0**			
Stocks and stores	1,058			1,058
Cash and banks	2,334			2,334
Accounts receivables	2,323			2,323
Other s.t. assets	136			136
Provision for bad debts	0		1,093	-1,093
Total current assets	**5,851**			**4,758**
Total assets	**10,364**			**10,094**
Liabilities				
Paid in capital	1,271	1,093	3,022	3,201
Revaluation reserve	75	75		0
Retained earnings, etc.	555	555		0
Total capital & reserves	**1,901**			**3,201**
Customer deposits (security)	256			256
Provision for gratuity	16			16
Total provisions	**272**			**272**
Government loans	1,454	1,045	640	1,049
Foreign loans	2,227	185	1,438	3,480
From DESA (for transfer of Gulshan Assets	1,999	1,999		0
Total long term liabilities	**5,680**			**4,529**
Accounts payable	359			359
Current portion of lt liabilities (local)	27	27	173	173
Current portion of lt liabilities (local)	0		75	75
Payable to BPDB	714			714
Payable to PGCB	84			84
Payable to DESA	597			597
Debt servicing liabilities (interest)	640	640		0
Clearing accounts	0			0
Other s.t. liabilities	90			90
Total short term liabilities	**2,512**			**2,093**
Total liabilities	**10,365**	6,442	6,442	**10,094**
Debt/equity ratio	**76**			**60**
Current ratio	**2.33**			**2.27**
Quick ratio	**1.91**			**2.29**

Table 4-14: Impact of financial restructuring on DESCo's Balance Sheet

4.3.6 West Zone PDC

The spin-off from West Zone PDC is based on a provisional vendor's agreement between BPDB and WZPDC. It determines a net asset value of TK 4.6 billion for the distribution assets transferred to WZPDC. According to information we received from WZPDC, only TK 3 billion are for plant and equipment, whilst TK 1.6 billion are for land. This obviously represents a revalued price of the land, since it represents a considerable part (95%) of the land value included in BPDB's balance sheet for the distribution segment.

In addition to that we where informed that BPDB has the intention to increase the value of the assets transferred to WZPDC by TK 18.6 billion, which in BPDB's opinion reflects the revalued asset base of the WZPDC's distribution assets.

For this reason we estimated the asset value based on the information on the distribution cost that we received from the Regional Accounting Offices via BPDB. We consider that this estimate is closely reflecting the book values for the west zone distribution assets. The gross asset value is estimated to TK 10.1 billion. According to the average age structure of distribution assets in BPDB the accumulated depreciation would sum up to TK 6.4 billion leaving a net fixed asset value of 3.7 million.

Together with the asset transfer WZPDC inherited TK 3.2 billion of accounts receivable from end use customers and Government duty to be paid back to BPDB. Similar to the accounts receivable transferred to DESCO and REB together with the transfer of distribution assets we have written-off the accounts receivable to be paid back to BPDB and corrected the WZPDC 's and BDPB's balance sheet accordingly.

Based on these two major assumptions the balance sheet of WZPDC shows a debt : equity ratio of 65% to 35% and current and quick ratios of 0.96 and 0.89 respectively.

Prior to the restructuring, the long term debt of WZPDC of TK 8.1 billion (consisting of TK 3.9 billion government loans and loans to BPDB and TK 4.1 billion of debt service liabilities) have been reduced to TK 4.9 billion as shown Table 4-15. The current and quick ratio improved to 2.7 and 4.1 respectively.

West Zone Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Balance sheet				
Assets				
Fixed Assets gross value	10,143			10,143
Depreciation	-6,409			-6,409
Fixed Assets net value	3,734			3,734
Project in Progress	4,082			4,082
Total fixed assets	**7,815**			**7,815**
Intangible assets & investment	**27**			**27**
Stocks and stores	521			521
Cash and banks	1,076			1,076
Accounts receivables trade	2,791			2,791
Accounts receivable other	0			0
Claim to BPDB	215		215	0
Other s.t. assets	306			306
Provision for bad debts	-176		1,743	-1,919
Total current assets	**4,734**			**2,775**
Total assets	**12,575**			**10,617**
Liabilities				
Paid in capital	2,619	1,757	2,978	3,840
Revaluation reserve	0			0
Retained earnings, etc.	39	39		0
Total capital & reserves	**2,658**			**3,840**
Grants	260	260		0
Customer deposits (security)	573			573
Deposit works fund	230			230
Provision for gratuity	6			6
Accounts receivable taken over from BPDB	0			0
Total provisions	**1,070**			**810**
Government loans	2,045	2,895	4,034	3,184
Foreign loans	1,888	123		1,765
From BPDB (cash furnishing and assettransfer)				
Total long term liabilities	**3,933**			**4,950**
Accounts payable SB	528	11		517
Accounts payable PGCB	61			61
Accounts payable other services	24			24
Current portion of lt liabilities (foreign)	0		123	123
Current portion of lt liabilities (local)	0		227	227
Debt servicing liabilities (principal)	1,737	1,737		0
Debt servicing liabilities (interest)	2,363	2,363		0
Clearing accounts	136	136		0
Other s.t. liabilities	65			65
Total short term liabilities	**4,914**			**1,017**
Total liabilities	**12,575**	9,321	9,321	**10,617**
Debt/equity ratio	**65**			**60**
Current ratio	**0.96**			**2.73**
Quick ratio	**0.89**			**4.10**

Table 4-15: Impact of financial restructuring on WZPDC's Balance Sheet

4.3.7 Conclusions on the Financial Restructuring

The financial restructuring has been geared towards the reduction of the historic debt burden of the power sector entities to achieve a financially viable basis for the future operation of the successor companies following power sector restructuring.

The following measures have amongst other things been considered in the context of the financial restructuring:

- reduce inter-company debt resulting from bulk supply and wheeling services to a level of three months billing;
- clear accounts receivable from end-use customers by
  - setting-off balances of Government and Semi Government customers in excess of three months debt service liabilities;
  - writing-off non-collectible accounts receivable from private end-use customers; and
  - building up of provisions for balances of private end-use customers receivables in excess of three months billing.
- making of provisions for the unfunded and unrecorded pension and gratuity obligations in DESA's and BPDB's balance sheets;
- finalize unresolved issues of ongoing transfers of assets;
- clear other inter-company accounts; and
- resolve "clearing accounts".

We have considered a proportion of debt : equity of 60% : 40% as sustainable for the successor companies and consequently applied the following principles to reduce the long-term debt involved in the power sector entities:

- the balance of the outstanding foreign loans is retained by the entities;
- unpaid debt service liabilities are transferred to local loans; and
- the local loans (including the debt service liabilities) are transferred to equity to achieve the target debt : equity ration of 60 : 40.

The financial restructuring of the balance sheets requires preparatory works to clarify and prepare the data basis. These works can be initiated on the short-term basis. For details please see Section 7.1.

The financial restructuring has been applied across all sector entities, including PGCB and DESCO. The two companies are financially performing according (and in case of DESCO above) standards, however, both companies are not very well capitalized and – considering their huge upcoming investment program – need a strengthening of their financial position.

In total the overall long-term and short-term liabilities of the power sector entities have been reduced from TK 256.1 billion to TK 185.2 billion by TK 70.9 billion (27.7%). The reduction of the long-term liabilities alone covers TK 40.1 billion (21.8%).

	BPDB		PGCB		DESA		DESCO		WZPDC		APSC		Total	
	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring
(billion TK)														
GOB Loans	22.4	52.4	1.6	3.9	6.7	20.1	1.5	1.0	2.0	3.2	0.3	4.0	34.6	84.6
Foreing Loans	23.8	25.3	24.5	18.3	7.1	6.1	4.2	3.5	1.9	1.8	14.5	5.0	76.1	60.0
Current Portion	4.9	2.3	1.2	1.8	0.8	0.6	0.0	0.2	0.0	0.1	0.0	0.4	7.0	5.3
DSL Principal	24.3	0.0	0.0	0.0	2.6	0.0	0.0	0.0	1.7	0.0	0.0	0.0	28.7	0.0
DSL Interest	33.0	0.0	0.9	0.0	8.5	0.0	0.6	0.0	2.4	0.0	0.0	0.0	45.4	0.0
Payables	11.3	9.9	0.4	0.4	31.4	3.3	1.8	1.8	0.6	0.6	0.0	0.0	45.6	16.1
Other liablities	12.2	12.1	0.5	0.4	3.9	5.1	0.4	0.4	1.3	0.9	0.5	0.3	18.8	19.2
Total	**132.0**	**102.0**	**29.2**	**24.9**	**61.1**	**35.2**	**8.5**	**6.8**	**9.9**	**6.6**	**15.4**	**9.7**	**256.1**	**185.2**
D ebt : equity ratio	59	60	80	60	222	60	76	60	65	60	93	60		
current ratio	0.99	1.56	2.48	2.43	0.41	1.48	2.33	2.27	0.96	2.73	5.23	2.21		
quick ratio	0.91	1.53	2.27	2.19	0.42	2.14	1.91	2.29	0.89	4.10	3.52	1.27		

Table 4-16: Summary of the Impact of the financial restructuring on the power sector entities

Financial restructuring has improved the current and the quick ratio for most of the companies. They are now in a range well above one for all the companies.

4.3.8 Impact on the Government Budget

The financial restructuring measures impact as well on the financial position the Government has towards the power sector entities. The Government is the sole shareholder of BPDB and DESA – which in turn are shareholders for the remaining power sector entities and the largest debtor since it provides all loans in local currency and on-lends all foreign loans under subsidiary loan agreements.

The financial position of the Government against all power sector entities before and after financial restructuring can be seen in Table 4-17. It shows that the equity position decreased slightly from TK 64.5 billion to 61.5 billion and Governments long term debt decreased sharply from TK 191.7 billion to TK 149.9 billion.

	BPDB		PGCB		DESA		DESCO		WZPDC		APSC		Total	
	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring	before restructuring	after restructuring
Equity														
Paid in Capital	77.1	58.8	0.0	0.0	11.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	88.5	61.5
Revaluation Reserve	55.7	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.7	0.0
Retained Earnings	-53.6	0.0	0.0	0.0	-32.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7	0.0
Loans														
GOB Loans	22.4	52.4	1.6	3.9	6.7	20.1	1.5	1.0	2.0	3.2	0.3	4.0	34.6	84.6
Foreing Loans (SLA)	23.8	25.3	24.5	18.3	7.1	6.1	4.2	3.5	1.9	1.8	14.5	5.0	76.1	60.0
Current Portion	4.9	2.3	1.2	1.5	0.8	0.6	0.0	0.2	0.0	0.1	0.0	0.7	7.0	5.4
DSL														
Principal	24.3	0.0	0.0	0.0	2.6	0.0	0.0	0.0	1.7	0.0	0.0	0.0	28.7	0.0
Interest	33.0	0.0	0.9	0.0	8.5	0.0	0.6	0.0	2.4	0.0	0.0	0.0	45.4	0.0
Total	187.8	138.7	28.2	23.7	11.0	29.5	6.3	4.7	8.0	5.1	14.9	9.7	256.1	211.4

Table 4-17: The financial position of the Government before and after financial restructuring

Although restructuring has a substantial impact on the Government's financial position, the advantages of the restructuring measures to the Government outweigh the disadvantages.

The current financial status of the sector entities has an adverse impact on the state budget. The Government:

- receives no debt service payment on foreign loans from the utilities - GOB pays the interest and principal on the loans to the donor agencies;
- provides investment support for the utilities by proving 60% of equity and 40% of Government loans for the portion of the investment which is not donor funded;
- does hardly get any interest and principal payments on the GOB loans;
- does not receive tax payments nor dividend payments from the utilities; and
- has contingent liabilities by covering the sector for non-payment for suppliers credits and IPPs.

The financial restructuring measures offer significant advantages to the Government at a low risk. Restructuring:

- offers the chance to achieve commercial operation of the utilities;
- provides an important step to wards long term financial recovery;
- involves no Government expenses in the short run;
- has a positive impact on the Government budget in the medium term and long term, since it
  - reduces requirement for investment support;
  - ensures debt service payment for foreign and local loans;
  - ensures tax payments; and
  - allows dividend payments on the long run.

The long-term impact of financial recovery on the Government Budget is described in Section 6.4.2.2.

4.4 "Unbundling" of BPDB's balance sheet

4.4.1 Principles Applied

The balance sheets of BPDB's successor companies are based on BPDB's restructured balance sheet. It was not possible to allocate the single balance sheet items directly to the successor companies since the relevant accounting data have not been available in the necessary details. Therefore allocation was performed according to the principles set out below in Table 4-18.

There are a number of items that require some further explanation:

- **Long term loans:** long term loans are either of foreign loans (donor agency funded), which have been lent on to BPDB or Government Loans. With respect to foreign loans, BPDB entertains a detailed loan administration that allows their allocation to projects. However, in some cases it is difficult to undertake an allocation to the successor companies – mainly in the case of the distribution companies, where regional overlaps of projects are quite common. In these cases, allocation of the loan portion is simply not possible. In these cases the loan balances as well as the related unpaid debt service liabilities have been split according to the sales revenues (as an indication of the earning potential) of the distribution companies).
- **Capital and reserves**: Equity is not allocated to the successor companies. In fact it is a result of the allocation of the fixed and current assets and of the long-term, medium term and short term liabilities. It therefore is used as a position to balance

the balance sheets of the successor companies. Of course this leads to debt : equity ratios which are far from the target of 60 : 40 debt equity ratio, see Section 4.4.2 for further handling.

- **Fixed assets in operation**: the transfer of fixed assets from BPDB to successor companies spun-off from BPDB (APSC and WZPDC) has always been a subject to long discussions. For WZPDC it is still unclear which transfer value will finally be applied in the finalized Vendor's Agreement. Given the present circumstances of book keeping at BPDB it is not clear whether the asset register provides for an appropriate allocation of assets and asset values to the potential successor companies, although annual depreciation has been shown at least for the different distribution areas. With respect to generation it is obvious that the annual depreciation has been allocated to the various generators according to the installed capacity – we therefore assume that book values for each of the plants are not available.

  Since it is obvious that the accounting data received from BPDB are at least doubtful different ways of allocating the book values may be considered such as an valuation of the assets based on revenue or profitability parameters. Whereas – given the present financial status - profitability parameters may not be applicable, an allocation based on revenues could be used instead.

  However, for the purposes of our financial modeling we have used an allocation of the assets based on the financial data on depreciation that we received from BPDB and its SBU's. We believe that these data represent the current situation in the distribution areas fairly correct.
- **Other fixed assets**: Besides the operation of assets for electricity generation and distribution BPDB owns some assets which are not related to its core business, e.g. BPDB operates pole factories in Bangladesh. We have not allocated such assets to the successor companies and therefore they are as well not considered in the financial projections.
- **Pension and Gratuity Obligations**: The unrecorded pension and gratuity obligations of BPDB are as well not attributed to the successor companies. similar to the transfer of the employees to PGCB in case of the transfer of BPDB's transmission assets, the funding of these obligations may not be a burden to the distribution and generation companies spun-off from BPDB. But it is clear that in case of transfer and/or retrenchment of employees from BPDB (and as well of DESA) to successor companies the accrued pensions and gratuities need to be settled. We suggest that the Government may do this directly or via the planned BPDB sector holding.

Balance Sheet Item	**Allocation Principle**	**Allocated to**
Fixed Distribution Assets	Based on book values. depreciation recorded by SBU's in 2005, age structure and depreciation rate as recorded in the relevant section of BPDB's financial statements	North Zone, West Zone, Central Zone, South Zone
Fixed Generation Assets	Based on book values, annual depreciation recorded in annual generation statistics, estimated age structure of generators according to commissioning date.	EGCB, Ghorashal Power Station, BPDB Generation
Other Fixed Assets	Fixed Assets not related to electricity generation, transmission and distribution not considered	Separated from electricity supply

Balance Sheet Item	Allocation Principle	Allocated to
Work in Progress	Recording in BPDB's financial statements and recordings on ongoing Projects	Distribution Companies and Generation Companies
Stocks and Stores	Pro rata according to operation and maintenance cost	Distribution Companies and Generation Companies
Cash at Bank	Pro Rata according to sales revenues 2005	Distribution Companies and Generation Companies
Accounts receivable from end-use customers	Total amount (after restructuring and excluding WZPDC) according to the revenues from electricity sales	North Zone, Central Zone, South Zone
Accounts receivable from DESA, DESCO, REB, WZPDC	Total amount after restructuring in total to Single Buyer.	Single Buyer
Accounts Receivable of Single Buyer	The accounts receivable of the Single Buyer are passed on as accounts payable from the Singe Buyer to the Generation Companies – pro rata according to their bulk electricity sales	EGCB, Ghorashal Power Station, BPDB Generation
Other accounts receivable	Not considered in the Distribution Companies, Generation Companies and the Single Buyer	Sector Holding / GOB
Provision for Bad and Doubtful Debt	According to accounts receivable from end-use customers	North Zone, Central Zone, South Zone, West Zone
Advances to contractors and suppliers	Pro rata according to Work in Progress	Generation and Distribution Companies
Advances to employees	Pro rata according to the number of employees	Generation and Distribution Companies
Stocks and Stores	Pro rata according to the net value of plant in service	Generation and Distribution Companies
Deposits and Pre-paid Expenses	Pro rata according to Work in Progress	Generation and Distribution Companies
Customer Deposits	Pro rata according to electricity sales	Distribution Companies
Deposit Works Funds	Pro rata according to electricity sales	Distribution Companies

Balance Sheet Item	Allocation Principle	Allocated to
Long term foreign and government loans	Long term foreign and local loans are directly attributable to generation and distribution according to the (corrected) figures of BPDB's loan administration. For generation loans can be directly allocated to projects, which in turn can be allocated to the generation companies. In case of distribution projects this is hardly possible, due to regional overlaps. In this case allocation has been undertaken pro rata to electricity sales.	Generation and Distribution Companies
Accounts payable from Discos (to Single Buyer)	See accounts receivable from Single Buyer above	Distribution Companies
Accounts payable to PGCB	no payables recorded	--
Accounts payable to IPPs	no split up – transferred to Single Buyer	Single Buyer
Accounts payable other	fuel related accounts payable according to electricity generation	Gencos
Other accounts payable	Pro rata according to 2005 operation cost	Gencos / Discos
Other short term liabilities	Pro rata according to 2005 operation cost	Gencos / Discos
Liabilities for pension and gratuities	not split up - no liabilities have been allocated to the successor companies	---

Table 4-18: Principles applied to the allocation of BPDB's restructured balance sheets to the BPDB successor companies

4.4.2 Pro-forma balance sheets of successor companies

The final formulation of the pro-forma balance sheets of the successor companies uses the same debt :equity ratio of 60% to 40% as it has been used as a target for the whole exercise of restructuring of the balance sheets. This means, that the local loans (including the unpaid debt service liabilities) are transferred to equity as to achieve the target debt : equity ratio.

The resulting balance sheets are shown in Appendix B to this report.

5. Financial Recovery Plan

Whilst financial restructuring deals with releasing balance sheets from historic burdens which are unrecoverable from existing resources or future revenues, refinancing and/or possibly recapitalisation of the balance sheet of existing and/or future power sector entities, financial recovery has the objective to improve the earnings situation of the companies.

Financial restructuring alone will hardly be in the position to create financially viable companies, when not accompanied by a financial recovery plan. Financial recovery on the other hand requires a number of measures to enhance revenues, improve efficiency and reduce cost within the power sector entities whereas the accomplishment of such measures needs the appropriate setting within the companies and within the power sector.

Therefore the financial recovery plan needs to consist of a series of measures. described in the following section.

The financial recovery of the power sector relies directly on three pillars:
- financial restructuring of the balance sheets, as described in Section 4;
- performance improvement; and
- tariff increase.

To achieve long term sustainability, these measures will have to be supported by
- improvement of corporate governance and corporate culture
- establishment of a feasible market structure with clear interfaces and
- establishment of market governance.

5.1 Performance Improvement for Financial Recovery

As identified above the major problem in the power sector results from the low cash flow / liquidity in the distribution segment which dries up the upstream businesses in the electricity supply chain. The problem is related to the high losses in the distribution system, low billing and revenue collection.

Generally spoken the financial recovery measures improve the earnings situation meaning the relation between the revenues and the cost related to the supply of electricity.

The following general areas can be identified:
- reduction of the cost of supply; and
- improvement of billing and collection

Reduction of the supply cost has mainly to do with the reduction of the high losses in the distribution system resulting from:
- technical losses;
- inaccurate and defect end-user meters;
- illegal connections and theft of electricity;
- false meter reading; and
- poor internal controls.

The reduction of technical losses resulting from undersized and overloaded equipment and outdated design of the networks requires typically high investment in the reconfiguration of the network and adequate equipment. On the other hand

- introduction of scheduled maintenance;
- improvement of the quality of maintenance and defect detection; and
- immediate repair of defects.

The other issues (including poor billing and collection) are to a large extent organizational problems that can be tackled by the companies with relatively low cost amongst which are:

- identification of and focus on high loss areas through substation and feeder metering;
- control of the connections within high problem areas;
- identification and removal of illegal connections;
- inspection of meters including:
  - change of old and faulty meters;
  - detection and rectification of tampered meters;
  - detection and removal of meter by passes; and
  - identification of meters with no customer account.
- improvement of meter reading, billing and collection
  - verification of metering data;
  - review of meter reading in case of suspected false meter reading or fraud;
  - bill processing (via electronic system) and bill distribution within short period (one week following meter reading);
  - co-operation with the banks for reconciliation of collected and billed amount;
- consequent disconnection of non-paying customers;
- improvement of customer services;
  - customer relations management;
  - customer complaint management;
  - customer service center for bill related queries;
  - quick establishment of new service connections and reconnection of disconnected customers.

A significant contribution to a successful implementation of such measures is related to the training and education of the employees as well as the establishment of procedures to improve work routines and processes, e.g. through quality circles.

Such measures are already exercised in Bangladesh with some success. Examples can be found within DESCO which was successful to reduce system losses within its short period of existence to some 16.6%. To achieve this, DESCO consequently sourced out nearly all services related to network maintenance, meter reading, billing and collection. Only in one service area supply is conducted with DESCO staff serving as a “benchmark” area. When split off, DESCO has not taken over any staff from DESA.

For this reason DESCO may not serve as a model for future corporatization of new sector entities. However, there are other examples that can be used for successful performance improvement. To determine reasonable timeframes for

the achievement of the loss reduction we will identify such examples and use them as benchmarks. As a very first estimate we assume – in line with the assumptions of the PSMP - that a reduction of the system losses will be achievable to a level of 16% to 18% in the distribution companies (incl. 33kV, 11kV, and low voltage level) within a time frame of 5 years.. Further reductions to a level of 10% for DESCO and 12.5% for the other distribution companies may be achievable within further 5 years mainly through technical loss reduction measures and network rehabilitation. The longer timeframe for such measures is related to the longer lead times for investment required to secure funding and to go through the relevant design and procurement procedures.

However, the question needs to be answered whether the institutional and regulatory framework is in place and whether the existing sector entities have sufficient freedom and leeway to successfully implement programs to achieve financial recovery.

Discussions with representatives of the public utilities have shown that their decision making is constraint by a high dependence from and exertion of influence by the Government and trade unions. As specific areas of concern have been named

- complex procurement procedures and the use of Government budget for investment financing trigger the involvement of Government procurement procedures;
- procurement processes get delayed and/or are governed by political decisions;
- strong influence of the Government on operational matters;
- staff related decisions such as the introduction of innovative pay schemes away from the public sector rules as well as the application of bonus and incentive payments related to performance targets; and
- the freedom to hire staff and to terminate employment without compensation for corrupt practices.

5.2 Tariff Rationalization and Adjustment

Financial recovery of Bangladesh's power sector will not be sustainable unless the major problems of the present tariff system are tackled.

- End-user tariffs need to be increased to cost-covering level.
  The current tariff level is not adequate for cost recovery in the whole electricity supply chain under the present conditions. To a large extent this is due to the inefficiencies in the sector which increase supply costs unnecessarily. Therefore the key question to be resolved is: who may pay the cost of inefficiencies until they are eliminated during the financial recovery process:
  - the customers via an increased tariff or
  - the taxpayer via a government subsidy.

  An immediate tariff increase to cost-covering level would not be socially and politically acceptable. Thus, the cost-recovering tariffs will have to be introduced gradually. During the transition period, the sector entities require reliable subsidy payments from the state budget. Without support, either by subsidies from the state budget or by at least a temporary increase of the

tariffs in form of a surcharge on end-user tariffs, the financial recovery of the sector will not be achievable.

- The distortions in the end-user tariffs need to be removed.
  The current distorted tariff structure for end customers with high cross-subsidies from commercial consumers to residential consumers affects the economic viability of the power sector entities and change may be considered as an element of the financial restructuring and recovery plan.

- Bulk supply tariffs need to be increased and distortions removed.
  The current bulk supply tariffs are too low to cover the generation costs. The present situation which does not allow BPDB to pass-through cost increases via the bulk supply tariff will not be sustainable for a Single Buyer market and hinder financial recovery of the power sector entities. There are several ways of how such pass through can be achieved:
  - monthly price adjustment of the bulk supply tariff by a price adjustment formula considering inflation, fuel cost and exchange rate development of the Taka;
  - regular price review e.g. every three months; or
  - ad hoc price review if one key parameter (fuel, inflation, exchange rate) moves above a threshold limit.

  Furthermore, the PBS's pay a lower bulk supply tariff than the distribution companies. This form of cross subsidy on the bulk supply level needs to be considered in future as well in the context of the question whether uniform end-user tariffs shall be maintained across Bangladesh.

- The uniform end-user tariffs across Bangladesh need to be reconsidered.
  The combination of uniform end-user tariffs, uniform bulk supply tariffs and differing costs of distribution (due to differing load densities and customer mix in the various supply areas) lead a situation where distribution companies with a high load density and favorable customer mix are financially better off than companies with a low load density and an unfavorable customer mix. To avoid such disproportion it will either be required
  - to create a balance based on the bulk supply tariffs: those distribution companies with potential for higher earnings have to pay a higher bulk tariff rates – this solution is applied for the financial projections; or
  - to abandon the idea of uniform national tariffs and allow distribution companies to determine their own tariff level (which of cause needs to be determined in line with the tariff methodology set up by the regulator).

5.3 Improvement of Corporate Governance

In discussions with the representatives of DESCO and PGCB it became obvious, that the major benefits of the corporatization were identified in the changes of the corporate governance and company culture as well as the increased independence from the Government control and interference.

Although corporatization is not yet considered as a sustainable solution to achieve the improvement of the performance mainly in the distribution and generation segment, the creation of truly independent corporate governance is a prerequisite to the success of the financial restructuring and recovery plan and the creation of a financially viable power sector.

This was recognized already early in the power sector restructuring process. Areas with high distribution losses have been shifted away from DESA to DESCO or to PBSs to improve the operational performance in these areas.

Another issue that was raised in discussions with representatives of the power sector was the high influence of the labor unions on the companies. They were often identified as the major hindrance to the reform of the power sector and the change of corporate governance. DESCO has reduced the influence of the unions by not taking over staff from DESA. However, this triggers adverse effects in the public utilities DESA and BPDB and increases resistance against the reform plans of the Government. However, as corporatization is moving ahead it is indispensable to make the labor unions part of the process. Information on the targets of the reform process, the social benefits of an economic viable and efficient power sector and the envisaged reform program will form a basis for a successful co-operation.

First steps to improve the corporate governance have been undertaken with the establishment of strategic business units (SBUs). BPDB has established SBUs in its distribution segment on the level of distribution circles. They operate under a Performance Target Achievement Plan and Agreement (PTA) which is based on specific performance targets:

- system loss;
- accounts receivable
- cost of providing electric services;
- growth in electricity consumers; and
- growth of electricity consumption

just to name some of the most prominent targets. The targets are weighted according to weighting factors and their achievement is measured on an annual basis. Upon achievement of the targets, the SBU employees will receive a bonus which is up to 100% of the base salary. Underachievement of performance targets leads to (small) reductions of monthly salaries.

BPDB has provided us with statistical data for some SBUs and it can be stated, that improvements show in the area of system loss reduction and bill collection. However, the progress is rather small and shows, that the limited autonomy of the SBUs may not be sufficient to achieve the desired results within a reasonable time frame.

The change in corporate governance of the public sector enterprises will have to reduce the risk of political interference on the companies. This could be based on the following elements:

- creation of truly independent companies operating under the Companies Act by creation of appropriate Articles of Association;
- clear definition of the purpose of the company and its core operating principles;
- clear definition of the responsibilities of the owner, board of directors and management;
- transparent rules for the appointment (and dismissal) of the members of the board of directors and the management;
- provide management with control over staffing decisions;

- regular elaboration and publication of business plans;
- regular external monitoring and auditing of performance (under the BERC rules and jurisdiction); and
- creation of internal control procedures and performance monitoring.

The Three-Year Roadmap sets an ambitious framework in that respect. The unbundling of the power sector and the corporatization of the new sector entities under commercial law is certainly a step in the right direction. However, corporatization alone may not be sufficient to allow for a successful and sustainable restoration of the financial viability of the sector entities. There are other issues to be resolved to pave the way for financial recovery.

5.4 Market Governance

The future structure and functioning of the power sector is still vague. The policy statements and the updated three-year roadmap do not show the details on how the Single Buyer Market is going to be governed. This creates insecurities amongst the sector participants and may as well lead to difficulties in the creation of the appropriate commercial framework.

It therefore will be required to determine the design and the functioning of the power market in an appropriate set of market rules. The market rules may in the first place be designed for the envisaged Single Buyer Market but also allow for the development of the market through interim stages to a fully competitive multiple power market.

A next step would be the creation of a Market Operator function to supervise and enforce the market rules and to operate the market. This Market Operator function moves beyond the Single Buyer function as it is presently discussed. Besides the supervision and enforcement of the market rules it performs tasks such as:

- registration of market participants;
- receive bids and offers from market participants;
- determination of the economic dispatch and market price;
- meter reading, meter data processing and reconciliation;
- conduct the settlement process (including the preparation of the settlement statements in form of invoices and credit notes, billing, fund administration and transfer); and
- settle market related disputes.

The fact that all inter-company transactions in the power sector will be handled by the Market Operator starting with meter-reading and ending with the supervision of the fund transfer in accordance with a pre-determined settlement calendar will improve the financial discipline in the market. Any form of partial or complete non-payment of transactions will be noticed straight away by the Market Operator. Since the Market Operator is only a small organization without significant assets and credit rating it will not be able to cover non-payment from its own resources. It will therefore require prudential support from the market participants in form of a valid and binding and not subordinated obligation to pay to the Market Operator the amount relating to the obligations of the market participant. This prudential support can have the form of a guarantee from a bank carrying an appropriate credit rating or of cash deposits. The prudential requirements may be relaxed at

least partially if the market participant has demonstrated a timely payment history or an appropriate credit rating.

The positive effects will be that efficiency improvements and cost reductions in the sector entities can be achieved through

- a constant and secure cash-flow;
- appropriate financial planning;
- improvement of management decision making;
- appropriate long-term planning of major maintenance and overhaul; and
- reduction of the requirement of (expensive) working capital.

5.5 Commercialization

The commercial interfaces between the various existing and future sector entities need to be established to create a sound basis and framework for the commercial operation of the emerging sector entities. Commercialization means the clear definition of the technical and commercial linkages between the future power sector entities.

Commercial interfaces have already been created in a number of areas, however, this process is by far not completed:

- The Power Purchase Agreements for the BPDB owned power stations need to be established – this can be done prior to the corporatization of the generation segment as the power stations are presently operating as SBUs with at least a limited autonomy.
- We assume that the PPAs for the BPDB power stations will be in a similar form of the APSC PPA.:
  - The payment mechanism does not provide for incentives in relation to time availability of the power units.
  - The reference tariffs cannot be adjusted to exchange rate fluctuations, although the loans related to the power stations are mostly denominated in foreign currency. Without the exchange rate adjustment APSC will be stuck with the exchange rate risk, which might possibly affect their ability to pay their debt service.
  - The methodology of reference tariff determination may be contained in the PPA. The methodology may be sanctioned by the BERC.

The bulk supply tariff is defined as a flat rate TK/kWh tariff. Due to the recent increases of fuel cost, the local inflation and the deterioration of the exchange rate of the Taka against of the foreign currencies have increased the cost of electricity supply in all steps of the supply chain. However, the bulk supply tariff has not been adjusted.

- The PBSs are billed by BPDB at the 33kV delivery points at the 132kV/33kV substations. This provides the correct result as long as the PBSs receive the electricity directly on a 33kV feeder from that substation. However there are some PBSs that receive electricity at the 11kV side of 33kV/11kV substations. This might require the establishment of a more complex metering and consequently of more complex billing.

- Commercial arrangements need to be put in place with respect to the wheeling of electricity through the distribution networks. This takes place with respect of bulk supply to the PBSs at the 11 kV level but will as well be required for SPPs and CPPs under an open access regime yet to be created.

6. Financial Projections

Financial Projections are conducted for the new sector entities as shown in Figure 6-1. For this purpose an Integrated Financial Model has been developed to assess the financial impact of recommendations for financial restructuring and recovery of the power sector and to help identify the best solution for financial restructuring. As a tool for the preparation of the Financial Restructuring and Recovery Plan, the model reflects the issues discussed in the plan and simulates the financial performance of the sector entities during its implementation. The financial performance indicators calculated in the model provide important feedback to the Plan. They demonstrate the implications of the recommended measures on sector performance and indicate where measures have to be adjusted to achieve optimum results.

Section 5.1 provides a description of the model structure, and section 5.2 summarizes the basic assumptions underlying the financial projections.

6.1 Structure of the Financial Model

In accordance with the requirements of the TOR, the Financial Model contains a sub-model of each of the existing and new sector entities in generation, transmission, distribution as well as the Single Buyer function that will come into existence after restructuring of the power sector.

In detail this means that the following entities are considered as a sub-model in the Financial Model:

- the generation presently integrated in BPDB is split in three different generation companies:
  - Ghorashal Power Station Company (GPSC), comprising presently a generation capacity of in total 862 MW;
  - EGCB will take over the existing generation capacity at the Haripur site (three open cycle gas turbines with a available capacity of 90 MW together) and at the Siddhirganj site (50 MW steam turbine and 210 MW steam turbine and it will construct the planned 3 times 120 MW gas turbines financed by ADB and World Bank; and
  - BPDB Generation: the remaining existing capacity of in total 1,274 MW is combined in one additional BPDB Generation Company. Additional generation capacity which is under public financing is added to this company, so that its capacity expands during the forecast period.
- Ashuganj Power Station Company (APSC), operating all power plants at the Ashuganj site: 2x64 MW steam turbines, 3x150 MW steam turbines, 90 MW combined cycle plants, 1x56 MW gas turbine plant.
- Power Grid Company of Bangladesh (PGCB), operating the 220kV and 132kV transmission network in Bangladesh, assuming that the 132kV transmission network presently still operated by DESA will be transferred to PGCB in the first year of the projection period.
- the Single Buyer / Market Operator will be created as a newly created entity with the main responsibility to operate the market and to by electricity from the power generators and sell it to the distribution companies.
- The distribution segment will comprise six companies:
  - Dhaka Electricity Supply Authority (DESA) supplying electricity in its present supply area

- Dhaka Electricity Supply Company (DESCO);
- the distribution presently integrated in BPDB is split into three different distribution companies:
  - North West Zone Power Distribution Company Ltd. (NZPDCL)
  - Central Zone Power Distribution Company Ltd. (CZPDCL)
  - South Zone Power Distribution Company Ltd. (SZPDCL)
- West Zone Power Distribution Company Ltd. (WZPDCL), which has already been separated from BPDB.

As shown in Figure 6-1, the Financial Model comprises in total 4 sub-models for generation, 1 sub-model for transmission, 6 sub-models for distribution and 1 sub-model for the single buyer. All these entity sub-models have an identical set-up as described below. Furthermore, the financial projections are consolidated for

- all functions which are currently carried out by BPDB or were carried in the recent past (i.e. BPDB generation, GPSCL, EGCB, Single Buyer, West Zone Distribution Company, North West, Central and South Zone distribution, as enclosed in the dotted line); and
- all these BPDB functions plus APSCL, PGCB, DESA and DESCO, as enclosed in the solid line.

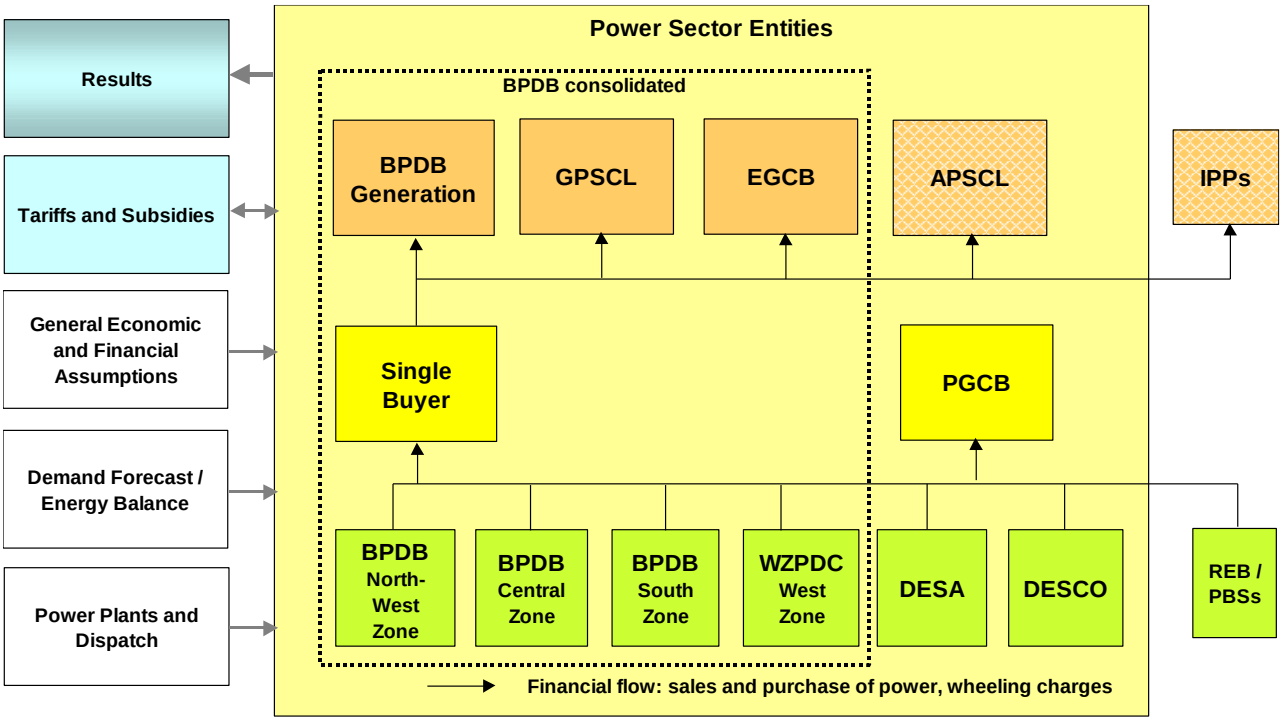


Figure 6-1: Basic Structure of the Integrated Financial Model for the Power Sector

The entity sub-models are cross-linked through:

- Energy flow from generation to transmission to distribution, including losses
- Payments from distribution to Single Buyer to generation
- Generation tariff charged by generators to the Single Buyer

- Bulk supply tariff (BST) charged by the Single Buyer to the distribution companies
- Wheeling charge charged by the transmission company to the distribution companies

Apart from these entity sub-models, the Integrated Financial Model contains several sheets which provide relevant input for all entity sub-models:

- a sheet which sets out the main economic and financial assumptions (general assumptions sheet);
- a sheet which summarizes the consolidated energy balance of the sector energy sales to customers, transmission and distribution losses as well as net generation requirements over a 10-year period (demand forecast / energy balance sheet);
- a sheet which provides a projection of the generating capacity required to meet the demand for electricity, considering plant retirements and additions, according to the Power Sector Master Plan (PSMP); the projections also include net generation, fuel consumption and O&M costs (power plants and dispatch sheet);
- a sheet which calculates the specific cost of electricity supply separately for each sector entity, calculates the revenue requirements and derives the cost-covering consumer tariff as well as the subsidy requirements at tariffs which do not recover the costs.

The key results of the financial projections are summarized in a separate sheet; these results include, among others, the financial implications of the sector performance on the government budget.

All sub-models for the existing and new sector entities are set up according to the same structure as shown in Figure 6-2, but input data and some algorithms are different for generation, transmission, distribution and the single buyer. Each sub-model contains various modules for projecting capital expenditure, fixed assets, debt service, operating costs, tariffs and revenues and working capital. These modules provide the inputs for the ten-year financial projections of the entity including income statement (profit & loss account), balance sheet, cash flow statement. Based on these financial statements, key operational and financial performance indicators are calculated for each entity.

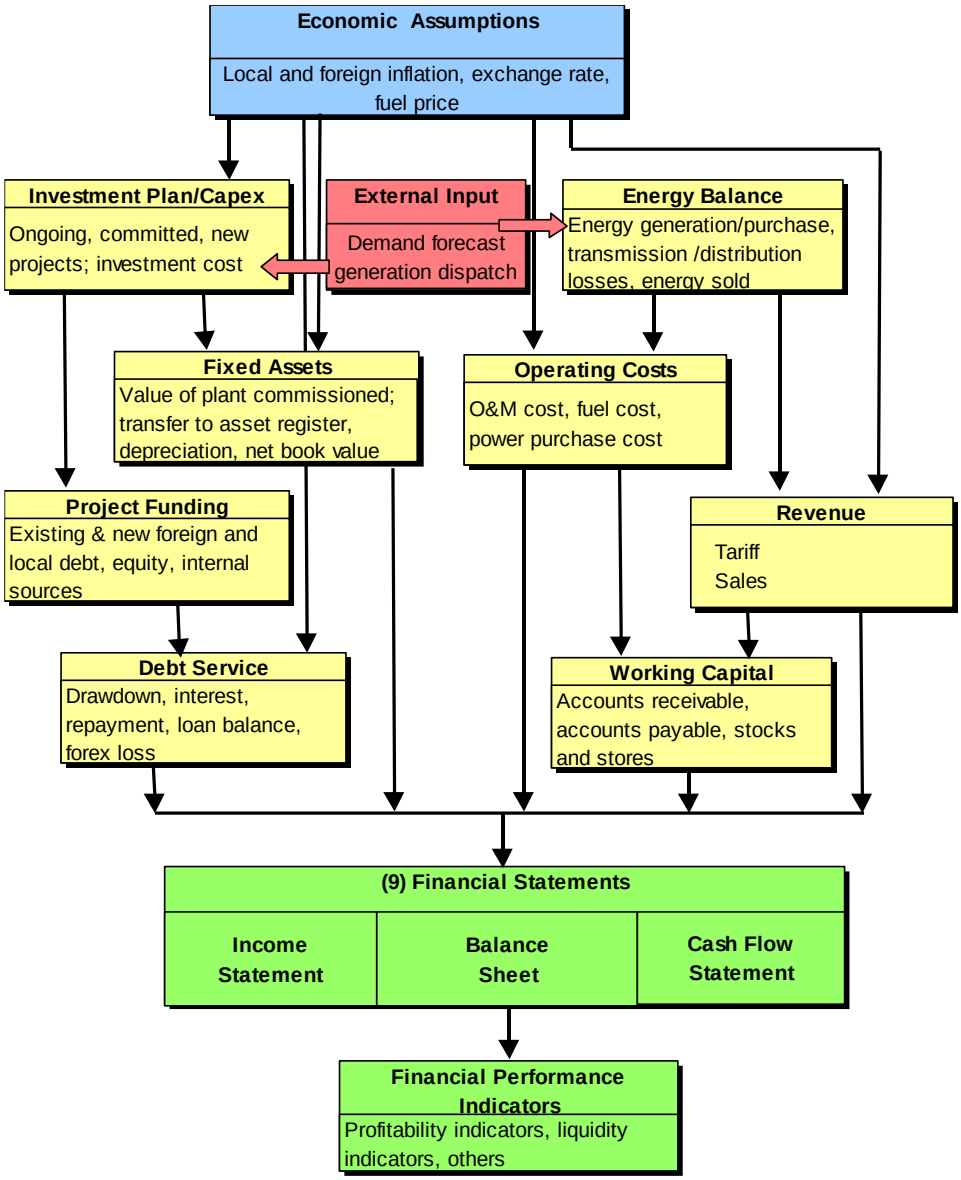


Figure 6-2: Structure of the Generic Entity Sub-Models

Details on the financial model, its handling and updating are set out in a separate "Users Manual for the Integrated Financial Model for the Bangladesh Power Sector" which is attached to this report together with a CD containing the basic version of the model.

6.2 Basic Assumptions for the Financial Projections

6.2.1 General Economic and Financial Assumptions

The Financial Model uses nominal calculations and hence is based on assumptions and forecasts of a number of macro economic parameters. The most important are shown in the following Table 6-1. The fuel price development has been adopted from the Power Sector Master Plan.

Macro Economic Parameters										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Inflation										
Local inflation (average % p.a.)	7.5%	6.0%	5.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Foreign inflation (average % p.a	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Exchange Rate										
Taka/US$ (end of financial yea	67.0	69.3	71.0	72.4	73.8	75.2	76.7	78.2	79.7	81.3
Taka/US$ (average of financial	65.5	68.2	70.2	71.7	73.1	74.5	76.0	77.4	79.0	80.5
Fuel Price Development (in real terms)										
Crude oil and oil derivates	-11.7%	-8.8%	-4.4%	-3.3%	-1.2%	1.4%	1.3%	1.4%	1.3%	1.4%
Natural gas (subsidized local pr	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic coal	-0.7%	-1.0%	-0.1%	-0.2%	-1.8%	-1.9%	-1.0%	-0.7%	-0.2%	0.0%

Table 6-1: Macro Economic Parameters

The sector entities are assumed to pay a corporate income tax of 37.5% on their taxable income.

6.2.2 Energy Balance

The energy balance has been adopted from the Power Sector Master Plan, however, some adjustments had to be made to cater for the latest 2004/05 figures and to take into account that DESA's 132 kV transmission assets are transferred to PGCB at the beginning of the projection period.

Energy Balance											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Electricity Sales to Customers											
Central (CZPDC)	735	834	915	1,003	1,101	1,207	1,316	1,435	1,564	1,704	1,858
North-West (NZPDC)	986	1,119	1,228	1,347	1,477	1,621	1,767	1,926	2,099	2,288	2,494
South (SZPDC)	2,243	2,546	2,793	3,064	3,361	3,687	4,018	4,380	4,774	5,204	5,672
West (WZDPC)	1,111	1,261	1,384	1,518	1,665	1,827	1,991	2,170	2,366	2,579	2,811
DESA	3,590	4,006	4,467	4,963	5,509	6,115	6,745	7,433	8,191	9,018	9,929
DESCO	1,536	1,731	1,938	2,134	2,349	2,587	2,830	3,096	3,387	3,705	4,053
REB/PBS	6,457	7,038	7,665	8,339	9,065	9,844	10,681	11,578	12,539	13,567	14,666
Total Sales to Customers	16,658	18,536	20,388	22,367	24,527	26,887	29,348	32,017	34,919	38,065	41,483
Increase in Electricity Sales		11.3%	10.0%	9.7%	9.7%	9.6%	9.2%	9.1%	9.1%	9.0%	9.0%
Distribution Losses (GWh)	4,171	4,385	4,549	4,695	4,832	4,958	5,046	5,115	5,164	5,185	5,178
Distribution Losses (%)	20.02%	19.13%	18.24%	17.35%	16.46%	15.57%	14.67%	13.78%	12.88%	11.99%	11.10%
Transmission Losses (GWh)	742	818	891	968	1,036	1,108	1,179	1,255	1,334	1,418	1,506
Transmission Losses (%)	3.5%	3.5%	3.5%	3.5%	3.5%	3.4%	3.4%	3.3%	3.3%	3.2%	3.2%
Net Generation (GWh)	21,571	23,739	25,828	28,031	30,395	32,953	35,573	38,387	41,417	44,668	48,167
Increase in Net Generation (%)		10.1%	8.8%	8.5%	8.4%	8.4%	8.0%	7.9%	7.9%	7.9%	7.8%

Table 6-2: Energy Balance 2005 - 2015

The following assumptions have been made with respect to the system losses in line with the basic assumptions included in the PSPM:

- DESA's distribution losses are presently at some 30% [11]. Due to the fact that the 132 kV network will be handed over from DESA to PGCB, the distribution losses will reduce. There are no reliable data on the losses in DESA's 132 kV network, however, we assume that they may not be more than 2.5% so that the distribution losses for DESA as a 32kV customer to the Single Buyer will start with 27.5% of

[11]) DESA records only 28.5% of distribution losses, however, in the context of the data received from PGCB and BPDB, 30% are more likely.

distribution losses in 2006. We assume that DESA may be in the position to achieve distribution losses at a level of 12.5%.

- BPDB presently shows total distribution losses on average 20.6% (excluding WZPDC). They are not equally distributed amongst the distribution zones:
  - Central Zone records distribution losses of 23.7%;
  - North Zone of 19.6%; and
  - South Zone of 19.1%.

  In line with the target applied for DESA, we assume that distribution losses of 12.5% may be achievable at the end of the projection period.
- West Zone PDC records 19.5% of distribution losses in the FY 2004/05 and we assume that a loss reduction to a level of 12.5% may be achievable by 2015.
- DESCO operates already at a much lower level of 16.5% distribution losses the assumption is that a reduction to 10.5%.
- The transmission losses within the high voltage network are presently slightly above 3.5%, which in international comparison is already a very reasonable value. The room for improvement is limited, we therefore assume in line with the PSMP that small reductions of the losses are achieved during the forecasting period, so that a level of 3.2% can be achieved by 2015.

Targets of 12.5% distribution losses as assumed for the most of the distribution companies for 2015 are still not to be considered as optimal. In international comparison distribution losses above 12% are still on the high side. According to estimations prepared by Power Cell the distribution losses may be in the range of

- 10% for the BPDB distribution system;
- 9.5% for the DESA distribution system; and
- 9.0% for the PBSs

as shown in Table 6-3 below. In that sense the assumptions on distribution losses taken in the PSPM are certainly conservative and better results may be achievable during the projection period.

Loss Source		Type of Power System		
Equipment rating	Location of equipment	Strong	medium	weak
		losses in %		
Set up 11/132 kV transformers	power station	0.250	0.375	0.500
Primary 230 kV transmission line	transmission grid	0.500	0.750	1.000
Primary 230/132 kV substation	transmission grid	0.250	0.375	0.500
Secondaty 132 kV transmission line	transmission grid	1.000	1.500	2.000
Secondary 132 / 33 kV substation	transmission grid	0.250	0.375	0.500
Transmission Losses		2.25	3.38	4.50
Primary 33 kB Distribution line	distribution system	2.000	2.000	4.000
Primary 33kV/11 kV substation	distribution system	0.250	0.375	0.500
Secondary 11 kV or 0.4 kV distribution li	distribution system	3.000	4.000	5.000
Secondary 11/0.415	distribution system	0.250	0.375	0.500
Service Connection / Metering Equipmer	customer	1.000	1.500	2.000
Distribution Losses		6.500	8.250	12.000
Total System Losses	Transmission and Distribution	8.750	11.625	16.500

Calculated Standard System Losses for the Utilities in Bangladesh

Transmission System	3.00%
BPDB System	10.00%
DESA System (incl 132 kV System)	9.50%
REB/PBSS	9.00%

Table 6-3: Calculated Standard Technical Loss of Utilities in Bangladesh

6.2.3 Power Generation

The following section describes the major assumptions taken with respect to the power generation.

6.2.3.1 Investment in Power Generation

The annual requirement for net generation according to the energy balance must be covered by existing and new power plant capacity. The optimized system expansion has been established in the PSPM using WASP (Wien Automatic System Planning) as the system planning tool.

Some adjustments to the PSPM had to be undertaken in those cases where, according to latest information included in BPDB's Rolling Plan, the commissioning of some power stations or plant extensions had to be postponed and the investments therefore are not anymore in line with the assumptions used in the PSMP.

In total the present available power generation capacity will have to be extended by 8,311 MW to cover power demand in the country and provide for sufficient reserve capacity. At the same time some 1,086 MW of existing power plant capacity are decommissioned as shown in Table 6-4.

Details on the development of the power capacity are shown in C to this report. The investment program for the entire sector is shown

	Available Power Plant Capacity										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Available Capacity (MW)											
BPDB Generation Company	1,274	1,336	1,578	1,825	1,742	1,940	2,387	2,387	2,467	2,467	2,617
GPSC	862	862	862	862	862	825	825	788	788	788	788
EGCB	315	315	287	287	287	554	751	751	751	751	751
APSC	643	643	643	523	523	423	423	423	423	423	423
IPP	1,260	1,300	1,500	1,950	2,850	3,750	4,200	5,100	5,550	6,450	7,000
Total Available Capacity	4,354	4,456	4,870	5,447	6,264	7,492	8,586	9,449	9,979	10,879	11,579
Installed Capacity (as per PSMP)	4,992	5,296	5,825	6,401	7,631	8,286	8,886	9,676	10,205	11,105	11,935
Capacity Additions		102.4	471.6	838	900	1455	1094	900	600	900	1050
Capacity Decommissioning		0	-58	-261	-83	-227	0	-37	-70	0	-350

Table 6-4: Projected Development of Power Generation Capacity (2005 – 2015)

For the purposes of the Financial Model the capacity additions have been allocated to the various power station companies as follows:

- BPDB Generation Company
  - Rehabilitation projects:
  - Power Station Rehabilitation Phase 2
  - Rehabilitation of Unit 3 of Karnafuli Hydropower Station
  - Rehabilitation of Units 4&5 of Karnafuli Hydropower Station
  - Rehabilitation of Power Station Phase 3
  - Future rehabilitation projects (still to be defined)
  - Completion of Tongi 80 MW Gas Turbine
  - Barapukuria 250 MW Coal Based Thermal Power Plant
  - Sylhet (Fenchuganj) 90 MW Combined Cyle -2nd phase
  - Chandpur 150 MW Combined Cycle
  - Sylhet 150 MW Combined Cyle
  - Extension of Karnafuli Hydropower Station 2 x 50 MW (Units 6&7)
  - Khulna 210 MW Thermal Power Plant
  - all new 150 MW gas turbine power plants identified in the PSMP as candidate plants: 2 x 150 MW (2008), 1 x 150 MW (2011), 1 x 150 MW (2013), 1 x 150 MW (2015)
- GPSCL (rehabilitation projects only)
  - Rehabilitation of Ghorashal Thermal Power Station Units 1&2
  - Power Station Rehabilitation Phase 2
  - Power Station Rehabilitation Phase 3
- EGCB:
  - Rehabilitation of Haripur Gas Turbine Power Station Units 1, 2&3
  - establishment of the 2 x 120 MW gas-turbines (ADB financed);
  - establishment of the 2 x 150 MW gas-turbines (WB financed)
  - and addition of a 210 MW steam-turbine at Siddhirgonj (Unit 2 of the recently completed power station);
- APSCL
  - Rehabilitation and Modernization of Units 3,4 &5 of Ashuganj Power Station
- IPPs:

- enhancement of the open cycle gas-turbine plants operated by Westmont Power (90 MW) and RPCL (140 MW) to combined cycle plants of 130 MW and 210 MW respectively;
- extension of the Westmont Power plant by additional 130 MW combined cycle;
- extension of the RPCL plant by additional 210 MW combined cycle;
- a new 450 combined cycle plant at Meghnagat
- a new 450 combined cycle plant at Seraganj; and
- all other eleven new 450 MW power plants identified in the PSPM as candidate plants are considered as IPP Plants.

These capacity additions and rehabilitation measures will require expenditures of 6,150 million US$ as shown in the table below. About thirds of these costs are borne by the private sector and one third by the public sector.

	Investment in Generation Capacity										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006-2015
BPDB Generation	7,050	15,587	14,841	16,241	8,687	3,612	5,761	3,944	6,291	11,109	93,124
GPSCL	438	89	81	279	0	0	0	0	0	0	886
EGCB	1,690	3,023	9,225	5,387	2,550	0	0	0	0	0	21,875
Subtotal Public Sector (million Ta	9,178	18,698	24,146	21,907	11,236	3,612	5,761	3,944	6,291	11,109	115,884
APSCL	3,441	813	2,002	0	0	0	0	0	0	0	6,257
IPPs	1,945	16,604	35,031	32,107	38,345	35,062	44,491	54,698	51,444	22,976	332,703
Subtotal Private Sector (million T	5,386	17,417	37,033	32,107	38,345	35,062	44,491	54,698	51,444	22,976	338,960
Total Generation (million Taka)	14,564	36,115	61,180	54,015	49,582	38,674	50,252	58,643	57,735	34,085	454,844
Total Generation (million US$)	222	530	872	753	678	519	662	757	731	423	6,149

Table 6-5: Capital Expenditure for Generation

For the ongoing projects, financing has been secured from international financing institutions or suppliers and from the Government of Bangladesh. The following table summarizes the details of the loans in disbursement to the generation entities. Where necessary, loans to BPDB have been allocated to BPDB Generation Company, EGCB and GPSC.

		Loans in Disbursement (Generation)							
		Remain. repaym. yrs	1st repaym. FY	Interest %	Total loan mUS$	Balance FY 2005 mUS$	Un-drawn mUS$	Balance FY 2005 mTaka	Un-drawn mTaka
BPDB Generation Company									
Power Station Rehabilitation Phase-2 BPDB component (2016 ADB)		6	2006	7.7%	20.1	7.4	12.7	474	809
Rehabilitation of unit 3 of Karnafuli Hydro P/S (Italy)		20	2008	5.0%	7.0	0	7.0	0	447
Rehabilitation of Karnafuli Hydro Power Station (Unit 4& 5) (Japan)		20	2009	5.0%	14.9	0	14.9	0	952
Rehabilitation of Power Station Ph-3 BPDB component (IDA)		20	2010	5.0%	133.8	0	133.8	0	8,548
Barapukuria 250 MW Coal Based Thermal Power Plant (CPEC)		10	2007	3.5%	188.1	116.9	71.2	7,469	4,551
Chittagong TP Plant Unit 2 (CPEC Supplier's Credit)		2.5	2006	5.0%	17.3	17.3	0.0	1,108	0
Subtotal BPDB Generation Company					381.2	141.6	239.5	9,051	15,307
GPSC									
Power Station Rehabilitation Phase-2 GPSCL component (2016 ADB)		6	2006	7.7%	1.6	1	1.0	38	66
Rehabilitation of Power Station Ph-3 GPSCL component (IDA)		20	2010	5.0%	5.6	0	5.6	0	360
Subtotal GPSC					7.3	0.6	6.7	38	425
EGCB	no loans in disbursement								
APSC	KfW loan	15	2012	4.0%	41.5	0.0	41.5	0	2,649
Total Loans in Disbursement (Generation)					429.9	142.2	287.7	9,089	18,381

Table 6-6: Loans in Disbursement (Generation)

6.2.3.2 Dispatch of the Power Stations

The dispatch of the generating plants in the Financial Model is taken from the WASP simulations performed for the PSMP. When WASP simulates the power generation dispatch under the load curve, plants are dispatched by economic merit order, i.e. the plant with the lowest variable operating cost is dispatched according to its operational characteristics until the dispatched energy fills up the greatest part of the integrated load curve possible. Since power plant dispatch is not a genuine task of a financial projections, the Financial Model is not capable of duplicating these simulations. The WASP results were slightly adjusted to the changes in the investment program (see section 6.2.3.1 above).

As Table 6-7 below shows, from 2010 onwards IPPs will provide the major part of net generation.

	Power Plant Dispatch										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Net Generation (GWh)											
BPDB Generation Company	5,898	6,066	7,672	8,951	8,124	7,930	8,923	8,631	8,895	8,718	9,283
GPSC	3,197	3,991	3,911	3,736	3,517	3,004	2,887	2,675	2,714	2,665	2,674
EGCB	1,223	1,932	1,683	1,569	1,568	2,264	2,668	2,586	2,613	2,555	2,555
APSC	2,989	3,016	2,827	2,169	2,001	1,614	1,551	1,509	1,530	1,504	1,510
IPP	7,898	8,368	9,368	11,239	14,818	17,774	19,178	22,619	25,299	28,861	31,777
Total	21,204	23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800

Table 6-7: Power Plant Dispatch as per PSMP

6.2.3.3 Operation and Maintenance Cost

The operation and maintenance cost that are presently shown in BPDB's financial statement do not represent the real cost situation since they are restricted due to insufficient operation and maintenance budgets. Budget restrictions are due to a lack of cash flow as already indicated earlier in this report.[12]

For cost projections in a financial model it needs to be considered that operation and maintenance cost change during the lifetime of a plant due to differing expenditure for different types of maintenance works and overhauls. The figures used for the financial projections therefore are averages over the lifetime of the plants. We have considered the values used for the WASP runs for the preparation of the PSPM.[13]

	Variable O&M cost ($/MWh)	Fixed O&M cost ($/kW-month)
90 MW Combined Cycle	1.30	1.25
150 MW Combined Cycle	2.50	1.00
450 MW Combined Cycle	1.80	0.38
Existing Gas Turbine	2.50	1.00
New 150 MW Gas Turbine	2.50	0.42
Karnafuli Hydropower Plant	0.00	2.00
Steam Turbine (oil, gas)	2.00	2.00
Steam Turbine (coal)	4.00	4.58

Table 6-8: Operation and Maintenance Costs (Generation)

[12]) See Section 4.1.1

[13]) See Table 2-3 of the PSMP (TA No. 4379-BAN: Power Sector Development Program II, Component B: Power Sector Master Plan Update, February 2006

6.2.4 Transmission

PGCB performs the transmission services on the high voltage network (132kV and above). The transmission assets in Dhaka that are presently still in the ownership of DESA are transferred to PGCB at an estimated value of TK 2.4 billion. The model works on the assumption that these transmission assets are transferred in the first projection year.

6.2.4.1 Investment in Transmission

For the financial projections, the following investments have been considered for PGCB, based on PGCB's investment plan:

- Projects to be transferred from BPDB:
  - Installation of capacitor banks in 7 grid substations
  - Rehabilitation, renovation and augmentation of grid system (RRAGS) Phase 2
- Hasnabad-Aminbazar (Savar) Tongi & Haripur-Meghnagat 230 kV transmission line
- Khulna-Ishurdi & Bogra-Barakapuria 230 kV transmission line
- Ishurdi-Baghabari-Seraganj-Bogra 230 kV transmission line
- Second E-W Interconnector (Ashuganj-Jamuna Bridge-Seraganj) 230 kV transmission line
- Joydevpur-Kabirpur-Tangail 132 kV transmission line
- National Load Despatch Center
- Shunt Compensation at Grid Substation by Capacitor Banks Phase 1
- Naogaon Niamatpur 48 km 132 kV transmission line
- Construction and extension of grid substations incl. transmission line facilities Phase 1
- Meghnaghat-Aminbazar 400 kV transmission line
- Three transmission line projects (132 kV)
- Bhola-Barishal 132 kV transmission line
- Aminbazar-Savar Kabirnagar 132 kV transmission line
- Enhancement of capacity of grid substations and transmission line (Phase 1).

From 2012 onwards annual investments of 85 million US$ are assumed for miscellaneous projects. Capital expenditures for all these projects amount to 1,353 million US$ over the projection period, as shown in the table below.

Investment in Transmission (PGCB)											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006-2015
Investment (million Taka)	9,790	15,964	12,012	12,227	6,550	8,814	7,676	8,021	8,382	8,759	98,195
Investment (million US$)	150	234	171	171	90	118	101	104	106	109	1,353

Table 6-9: Capital Expenditure for Transmission

Funding of these projects is assumed to follow the same principles as described in section 6.2.7.

The following table summarizes the details of the loans in disbursement to PGCB.

	Loans in Disbursement (Transmission)							
	Remain. repaym. yrs	1st repaym. FY	Interest %	Total loan mUS$	Balance FY 2005 mUS$	Un-drawn mUS$	Balance FY 2005 mTaka	Un-drawn mTaka
PGCB								
1505ADB	20	2006	8.0%	66.3	29.8	36.5	1,906	2,333
1731ADB	16	2007	7.5%	45.4	19.6	25.8	1,254	1,646
1885ADB (for Khulna-Ishurdi)	15	2008	5.0%	64.9	4.0	60.9	256	3,891
KfW (for Ishurdi-Baghabari)	15	2010	5.0%	25.0	0.3	24.7	16	1,579
Supplier's Credit (Tata and others)	10	2008	3.5%	23.0	6.1	17.0	388	1,085
Nordic Development Fund	15	2010	5.0%	14.0	1.3	12.6	84	808
DANIDA	15	2010	5.0%	6.1	2.9	3.3	182	209
Total Loans in Disbursement (Transmission)				244.7	63.9	180.7	4,086	11,550

Table 6-10: Loans in Disbursement (Transmission)

6.2.4.2 Operation and Maintenance Cost

O&M costs of the transmission entity are broken down for OMR (operation, maintenance and repair) cost, staff expenses and administrative cost.

- OMR costs are assumed to be 0.25% of gross fixed assets.
- The projection of staff expenses is based on the current average annual salary of 262,000 Taka per employee (which increases with inflation), and the increase in staff numbers which is linked to the growth of assets (growth rate of staff = 10% of growth rate of assets).
- Administrative costs amount to 25% of staff expenses.

6.2.5 Single Buyer

As a newly created institution, the Single Buyer will need to establish an office with office infrastructure, furniture, vehicles etc. It is assumed that capital expenditure of the Single Buyer will amount to TK 75 million over the projection period, 60% of which will be spent in the first year, and the remainder will be used for annual expenses.

The expenses are assumed to be financed by new foreign loans (70%) and local loans at the loan conditions described in above in section 6.2.7.

The following assumptions are made with regard to O&M costs:

- OMR costs amount to 2% of gross fixed assets
- The Single Buyer will have a staff of 100, with an average annual salary of 260,000 Taka per employee (similar to the salary level of PGCB). The staff will remain constant and the annual salary will increase with inflation.
- Administrative costs amount to 50% of staff expenses.

6.2.6 Distribution Companies

6.2.6.1 Investment in Distribution

For the financial projections, the following distribution investments have been considered based on BPDB's Rolling Plan and the investment plans of DESA,

DESCO and WZPDCL (where required, projects in BPDB's Rolling Plan have been allocated to the North West, Central and South Zones):

- **West Zone**
  - 5-Town Power System Development Project
  - Greater Khulna Power Distribution Project (Phase II)
  - WZ Power Infrastructure Development
  - FS Gas based Power Plant Project
  - 9 Town Power Distribution Project
  - 18 Town Power Distribution Project Phase- II
  - Power Distribution Project Phase -III East -West Combined
  - 16 Town Power Distribution Project Phase- II
  - Renovation, Rehabilitation & Extension of 33/11 kV Sub-Station
  - Emergency rehabilitation & expansion of urban area power distribution system.
  - Installation of Capacitor Bank at 11 kV level
- **Central Zone**
  - 9 Town Power Distribution Project
  - 18 Town Power Distribution Project Phase- II
  - Power Distribution Project Phase -III East -West Combined
  - 16 Town Power Distribution Project Phase- II
  - Renovation, Rehabilitation & Extension of 33/11 kV Sub-Station
  - 6-Town Distribution Project
  - Emergency rehabilitation & expansion of urban area power distribution system.
  - Installation of Capacitor Bank at 11 kV level
- **North-West Zone**
  - Greater Rajshahi Power Distribution Project Phase-II(Revised)
  - 9 Town Power Distribution Project
  - 18 Town Power Distribution Project Phase- II
  - Power Distribution Project Phase -III East -West Combined
  - 16 Town Power Distribution Project Phase- II
  - 10 Town Power Distribution Project
  - Renovation, Rehabilitation & Extension of 33/11 kV Sub-Station
  - Emergency rehabilitation & expansion of urban area power distribution system.
  - Installation of Capacitor Bank at 11 kV level

- **South Zone**
  - Greater Chittagong Power Distribution Project Phase-III(Revised)
  - 9 Town Power Distribution Project
  - 18 Town Power Distribution Project Phase- II
  - Power Distribution Project Phase -III East -West Combined
  - 16 Town Power Distribution Project Phase- II
  - Pre-paid Metering Pilot Scheme
  - Renovation, Rehabilitation & Extension of 33/11 kV Sub-Station
  - Energy Saving project
  - 12 Town Distribution Project
  - Power distribution Dev. Project in Hatia
  - Pre-paid Metering (Phase-1)
  - Emergency rehabilitation & expansion of urban area power distribution system.
  - Installation of Capacitor Bank at 11 kV level
  - Electrification of Chittagong Hill tract area Ph-3(Rev)
  - Electrification of Chittagong Hill tract Project(Kaptai- Bilaichhari)(Revised)
  - Electrification works of Chittagong Hill Tracts
- **DESA**
  - Greater Dhaka Power Distribution Phase IV
  - Procurement of 11kV Live Line Maintenance Equipment and Vehicles
  - Haripur-Ullon 132 kV Single Ckt. TL
  - Emergency Extension & Rehabilitation of Dhanmandi 132/33kV, 2x50/75 MVA S/S
  - Emergency rehabilitation and augmentation of 33/11 kV S/S
  - Emergency reinforcement & augmentation of DESA grid system
  - Procurement & installation of 50/75 MVA, 132/33 kV transformers
  - Upgradation of Shyampur BSCIC 11 kV Switching Station to a regular 33/11 kV Sub-station
  - Strengthening of power distribution system of DESA
  - Construction of 132/33 kV & 33/11 kV Substation at Adamjee Industrial Park
  - Construction of 33 kV switching station at Siddhirganj
- **DESCO**
  - Greater Dhaka Distribution Project (DESCO component)
  - Strengthening DESCO's distribution network
  - TA to strengthening DESCO's Fin Management
  - System loss reduction scheme
  - Planning & upgrading of power feeding and distribution system
  - Installation of fibre optics
  - Installation of SCADA network
  - Planning and renovation of distribution network Phase I
  - Planning and renovation of distribution network Phase II

Beyond the time frame of the entities' investment plans, future distribution projects as well as general investments in buildings, vehicles, office infrastructure etc. have been assumed as summarized in the following table:

	Additional Investment in Distribution (US$ million)	
	Future distribution projects	General Investments
Central (CZPDC)	33	15
North-West (NZPDC)	44	20
South (SZPDC)	99	46
West (WZDPC)	49	23
DESA	180	22
DESCO	60	66
	465	**193**

Table 6-11: Future Distribution Projects

Total investments for distribution are projected to amount to 2,202 million US$ over until FY 2014/15. Annual capital expenditure needs to increase drastically over the next five years and later stabilizes at a level of about 150 million US$ p.a.

	Investment in Distribution										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2006-2015
Central (CZPDC)	560	958	1,243	2,534	2,184	694	725	758	792	828	11,278
North-West (NZPDC)	2,494	3,584	2,899	1,946	594	932	974	1,018	1,063	1,111	16,615
South (SZPDC)	1,983	3,222	3,868	7,960	7,892	5,967	6,201	3,253	3,301	3,347	46,995
West (WZDPC)	2,240	5,823	3,805	1,549	1,150	1,050	1,098	1,147	1,199	1,253	74,887
DESA	5,190	8,439	3,595	2,369	2,663	2,782	2,908	3,039	3,175	3,318	138,497
DESCO	1,248	2,616	3,712	3,939	3,012	3,109	2,732	2,150	2,246	2,415	27,180
Total Distribution (million Taka)	13,715	24,642	19,122	20,298	17,495	14,535	14,638	11,364	11,777	12,273	315,451
Total Distribution (million US$)	210	362	273	283	239	195	193	147	149	152	2,202

Table 6-12: Capital Expenditure for Distribution

Funding of these projects is assumed to follow the same principles as described below in section 6.2.7.

Details of the loans in disbursement to the distribution entities for the funding of the ongoing projects are summarized in the table below.

	Loans in Disbursement (Distribution)							
	Remain. repaym. yrs	1st repaym. FY	Interest %	Total loan mUS$	Balance FY 2005 mUS$	Un-drawn mUS$	Balance FY 2005 mTaka	Un-drawn mTaka
Central (CZPDC)								
9 Town Power Distribution Project Central zone component (Nor	15	2009	5.0%	1.6	1.4	0.2	89	14
North-West (NZPDC)								
Greater Rajshahi Power Distribution Project Phase-II(Revised) (5	15	2007	5.0%	18.9	5.5	13.4	352	857
9 Town Power Distribution Project North zone component (Norw	15	2009	5.0%	1.6	1.4	0.2	89	14
South (SZPDC)								
Greater Chittagong Power Distribution Project Phase-III(Revised)	15	2008	5.0%	42.3	16.5	25.8	1,056	1,649
9 Town Power Distribution Project South zone component (Norw	15	2009	5.0%	2.4	2.1	0.3	134	20
Pre-paid Metering Pilot Scheme (199965179KFW)	15	2007	5.0%	5.0	0.6	4.4	39	278
West (WZDPC)								
9 Town Power Distribution Project West zone component (Norw	15	2009	5.0%	1.6	1.4	0.2	89	14
DESA								
Greater Dhaka Power Distribution Phase IV - 1730 ADB	20	2006	8.0%	39.1	6.8	32.3	433	2,067
Greater Dhaka Power Distribution Phase IV - 1505 ADB	20	2006	8.0%	40.5	23.2	17.2	1,485	1,100
DESCO								
Greater Dhaka Distribution Project (DESCO component) - 1505 A	20	2006	8.0%	23.4	18.0	5.4	1,148	345
Greater Dhaka Distribution Project (DESCO component) - 1731 A	16	2007	7.5%	21.8	17.1	4.7	1,090	300
Total Loans in Disbursement (Distribution)				198.2	94.0	104.2	6,006	6,658

Table 6-13: Loans in Disbursement (Distribution)

6.2.6.2 Operation and Maintenance Cost

For the purposes of the financial projections of the distribution companies the following cost components have been differentiated:

- purchase of electricity from the Single Buyer;
- cost of wheeling services from PGCB;
- salaries, wages and other staff related cost;
- cost for the operation, maintenance and repair of the distribution networks (OMR); and
- cost of retail services and administration

The purchase of electricity from the Single Buyer and the charges for PGCB's wheeling services represent the largest cost components for the distribution companies.

The following assumptions are made with regard to O&M costs:

- OMR costs will reach 1% of gross fixed assets in 2008.
- The projection of staff expenses is based on an average annual salary of 260,000 Taka per employee (in 2005 prices) to be reached in 2010, and the increase in staff. The benchmark for the salary corresponds to the salary currently paid by PGCB. The number of staff is assumed to decrease until the benchmark for the ratio of customers/employee is reached. This benchmark of 400 customers/employee for DESCO and 350 customers/employee for all other distribution entities is reached by using the natural fluctuation of staff of 3% p.a. and not recruiting new employees until the benchmark is achieved.
- Administrative and retail costs develop with the number of customers at a cost per customer of 381Taka for DESCO and 348 Taka for all other distribution entities.

6.2.7 Project Funding

Currently it is standard practice that 70% of the capital expenditure is funded from foreign sources and 30% from Government sources. The Government funds are provided as 40% loan and 60% equity.

For the future projections, project funding is assumed to be based on the following principles:

- The ongoing projects are funded by existing foreign loans and any internal funds available. The remaining funding requirements are entirely covered by local loans.
- New projects are funded by new foreign loans (70% of total expenditure), and any internal funds available. The remaining funding requirements are entirely covered by local loans.

All companies may use their internal funds for investments and not rely on grants from the government.

The Financial Model considers three different types of loans:

- old loans – have been disbursed fully and are being repaid
- loans in disbursement – are still being disbursed
- new loans – disbursement has not yet started.

For the repayment of old foreign loans two alternative scenarios are considered:

- All old loans of a sector entity are drawn together into one loan which is repaid over 15 years (without any further grace period) at a 5% interest rate.
- Old loans are serviced according to the loan conditions of each individual loan.

Loans in disbursement are serviced according to the conditions set out in the individual loan agreements.

For new foreign loans, it is assumed that the grace period is equal to the construction period, the repayment period is 15 years and the interest rate is 5%. Similar conditions apply to new local loans, with the exception that the grace period is assumed to be 5 years for generation and transmission and 2 years for distribution and the single buyer.

	Old loans (foreign & local)	Loans in disbursement	New foreign loans	New local loans
Grace period (years)	0	as per loan agreement	=construction period	generation: 5 transmission: 5 single buyer: 2 distribution: 2
Repayment period excluding grace (years)	15	as per loan agreement	15	15
Interest rate (% p.a.)	5%	as per loan agreement	5%	5%

Table 6-14: Loan Conditions

6.2.8 Other Assumptions

For purposes of completeness some additional assumptions that have been used for modeling purposes are listed below:

- The projection of the fixed assets is based on the following assumptions concerning the asset lives:

Asset category	Years	Depreciation rate
Steam turbine	30	3.3%
Combined cycle turbine	25	4.0%
Simple cycle turbine	20	5.0%
Hydro	50	2.0%
Transmission	30	3.3%
Distribution	30	3.3%
General (buildings, vehicles, office furniture & equipment, etc.)	30	3.3%

Table 6-15: Asset Lives

- Accounts receivable/payable
  - Customer accounts receivable are projected on the basis of equivalent days' of annual billing. The present situation shows that some of the distribution companies include customer accounts receivable exceeding half a year of

equivalent billing days. The reduction of the accounts receivable has a significantly positive impact on the cash flow positions of the companies. Due to the financial restructuring the outstanding accounts receivable will be reduced to 81 days of equivalent billing days. The projections assume that the equivalent billing days can be reduced to 60 by 2010.

- Accounts receivable from PBS and from DESCO to DESA are assumed to be reduced to Zero within 2 years.
- The target for accounts payable between the sector entities and to suppliers is set to 45 days to be reached in 2010.

- The interest paid to the entities on their positive cash balance is assumed to be 3% p.a., while the interest to be paid on their negative cash balance (overdraft, short term loan) is assumed to be 10% p.a.
- It is further assumed that the distribution companies have to establish a letter of credit amounting to 3 months of payments to PGCB and the Single Buyer at a cost of 1% of the letter of credit amount.
- Short term assets as well as short term liabilities are projected to increase by 2% p.a.
- All sector entities will sooner or later be corporatized. Corporatized entities have to establish a contributory provident fund (CPF), to which both employer and employee contribute 10% each of the basic salary which is 40% of the total salary. This CPF is considered in the balance sheets and projected to increase at 2x10%x40% = 8% of additional staff expenses
- Presently, none of the sector entities - even if they are profitable - do pay dividends to their shareholder. For the financial projections it is assumed that dividends are paid provided that the entity makes a profit, has sufficient cash available and has a debt/(debt+equity) ratio of less than 70%.

6.3 Tariff Calculations

Tariffs have not changed since 2003 despite increases in fuel prices, general inflation of above 7% p.a and a significant deterioration in the exchange rate. Brief calculations have indicated that the present tariffs on the bulk supply as well as on the end-use customer levels are not cost covering. To get a reasonable view on a cost covering tariff level, we have analyzed the revenue requirements for the bulk supply tariff, the wheeling charges as well as the end-use consumer level.

For this we considered as a basis the tariff formula as proposed by BERC in the “Draft Electricity Generation Tariff Methodology (see Section 2.1.6.2), i.e. we have calculated the allowed costs comprising the allowed operation and maintenance expenses, the depreciation on the fixed assets, and the rate of return.

For our revenue requirement calculation we have used

- the cost of power generation (based on the assumptions as described in Section 5.3.1 above);
- the cost of power transmission (Section 5.3.2)
- the cost of the Single Buyer (Section 5.3.3); and
- the cost of the distribution companies (Section 5.3.4)

We have used a total rate of return of 10% which is based on the rate of return on net fixed assets required by the international lending agencies as covenants in on-lending

agreements. The results are discussed in the following sections for each level in the electricity supply chain.

6.3.1 Average Cost of Power Generation

The cost of power generation comprises the cost of

- the three power station companies spun-off from BPDB:
  - Ghorasal Power Station Company,
  - EGCB; and
  - BPDB Generation;
- Ashuganj Power Station Company; and
- the various IPP's (existing ones as well as additions).

The Single Buyer purchases the electricity from the various generators at the bulk generation tariff set out in power purchase agreements between the generation companies and the Single Buyer.

The projections show that the cost of net generation will have to increase by some 27% in nominal terms from the present level of TK 1.835 per kWh (not considering the cost of transmission losses) to TK 2.32 per kWh to reach a full cost recovering level. As shown in Figure 6-3, the specific net generation cost increase in nominal terms up to the projection year 2012 to a level of TK 3.13 per kWh. From then on they remain relatively constant for the coming years.

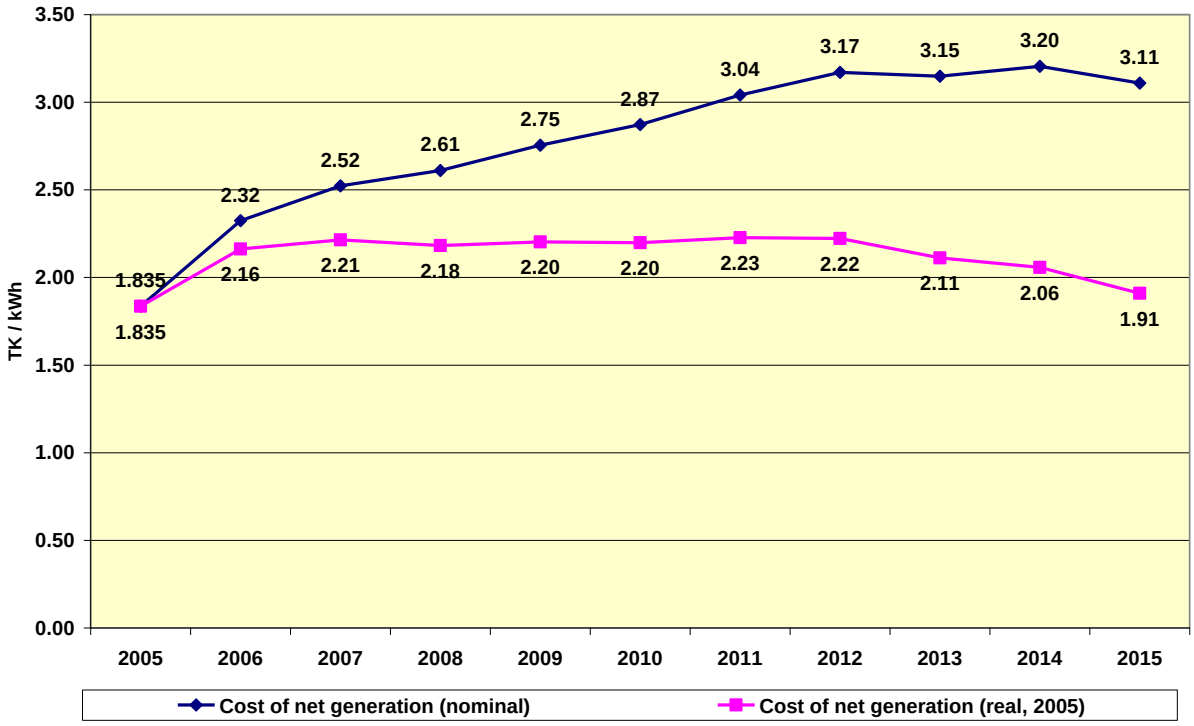


Figure 6-3: Development of specific cost of net generation in nominal and real (2005) values

Considering the cost increase in real terms, it shows that apart from the increase in the first year, the net generation cost remain nearly constant (meaning that in nominal

they increase along the general average inflation rate). From 2012 onwards the specific costs decrease again to a level that is only slightly above the starting level in the Financial Year 2004/05.

This results from the phasing out of the old and inefficient power stations and their replacement through highly efficient combined cycle plants during the course of the projection period.

Details on the cost calculations for each of the power generation companies are shown in Appendix D to this report.

6.3.2 Cost of transmission

The present average transmission tariff level of TK/kWh 0.2285 is cost recovering and provides sufficient revenues to PGCB to cover their annual cost and to achieve a rate of return on assets of 10% in the year 2005/2006.

The projections show that there is no reason to increase the transmission tariff up to the period of 2007 in nominal terms. A tariff increases will be required between 2008 and 2011 as consequence from the highly ambitious investment program of in total some US$ 1.35 billion (TK 98.2 billion) that PGCB envisages for the coming 10 years for network extension and improvement of network stability and reliability.

Up to 2011/12 the tariff will have to be increased by nearly 50% to a level of TK/kWh 0.335. Following that no further tariff increase in nominal term is expected. Instead the financial projections show a small decrease of the transmission tariff to TK/kWh 0.311 towards the end of the projection period.

In real terms this means that the wheeling charges will hardly increase above the present level. The projections show that they will be nearly 20% lower than the presently applied wheeling charges.

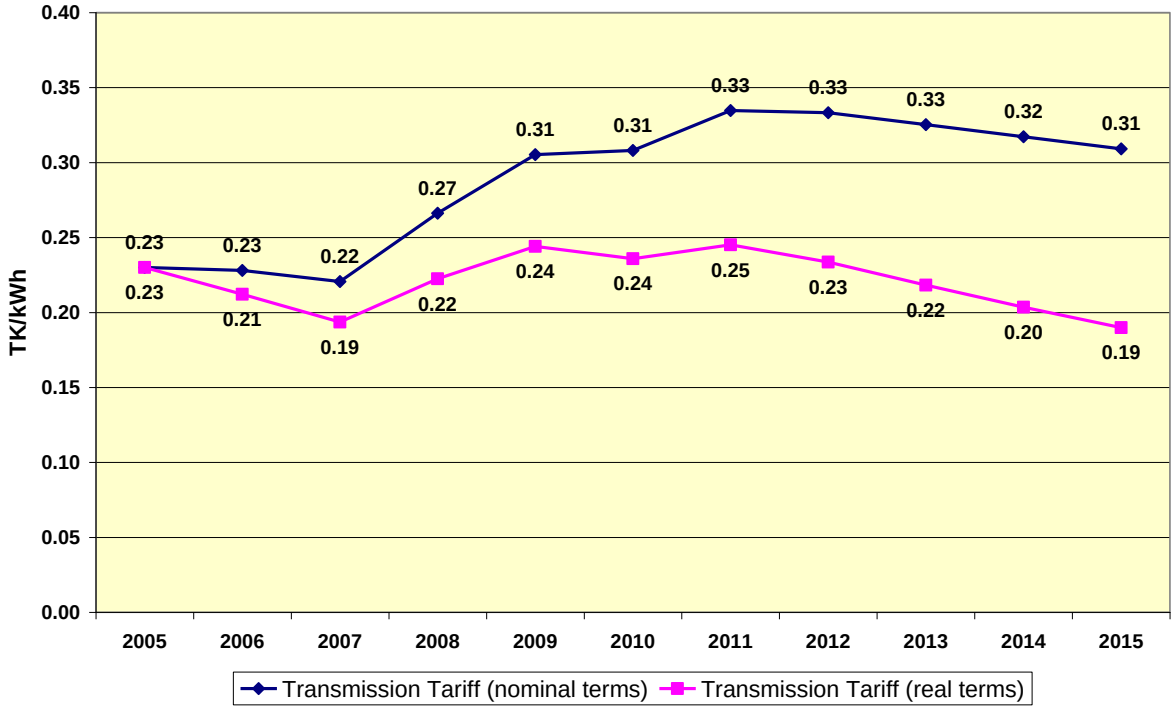


Figure 6-4: Development of Wheeling Charges in nominal and real (2005) terms between 2005 and 2015

6.3.3 Cost of Single Buyer

The Single Buyer is only a small company with a low asset base. Costs of the Single Buyer mainly consist of staff and administrative expenses. Specific costs amount to TK 0.002 per kWh purchased by the Single Buyer and remain at this level over the entire projection period.

6.3.4 Cost of Distribution Companies

The cost of power distribution cover

- capital cost (i.e. depreciation and return on net fixed assets);
- the cost of operating and maintaining the equipment;
- the retail cost (metering, meter-reading, billing, collection and customer relations); as well as
- administrative cost.

The tariffs of power purchase as well as for transmission are only considered in the following section to reflect the total average tariff.

As shown in Figure 6-5, distribution cost are projected to increase from the present level of TK/kWh 1.25 to TK/kWh 1.55 in the year 2010 and then decreasing again from 2012 onwards toward the end of the projection period to a level of TK/kWh 1.41 in nominal terms. In real terms it shows that the distribution costs are actually decreasing significantly during the projection period to a level of TK/kWh 0.87. This is mainly due to efficiency improvement related reduction of staff, administrative and retail cost.

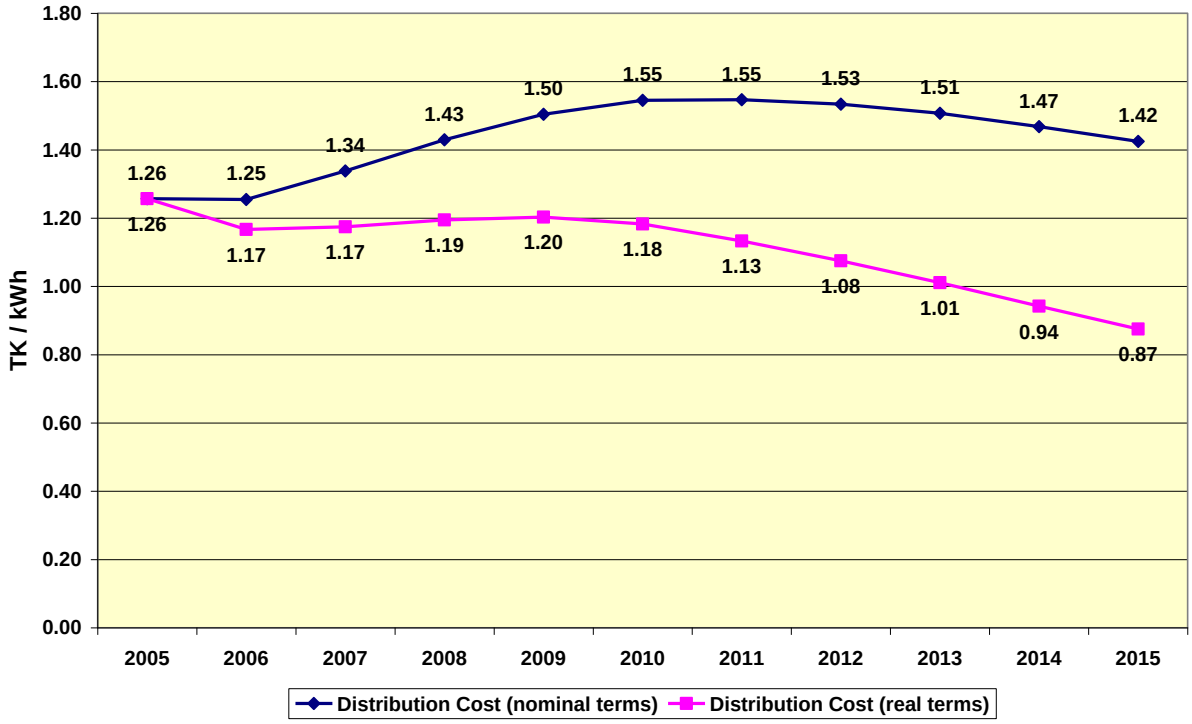


Figure 6-5: Development of Distribution Cost in nominal and real (2005) terms between 2005 and 2015

However, it needs to be noted that the distribution cost in the six distribution companies differ significantly (see Figure 6-6). The two distribution companies in the urban area of Dhaka show the lowest distribution cost, whilst the distribution companies covering the north and central area have nearly double the cost per kWh sold to end-use customers.

The differences in distribution cost result from the structural differences in the distribution areas - see Table 6-16.

- There is obviously a strong correlation between the market share of the distribution companies in their supply areas and the specific supply cost. BPDB holds only a market share of 19% in central zone, of 42% in north zone, of 59% in west zone and 63% in south zone.
- The average consumption per end-use customers and the revenue per customer are much higher in the Dhaka supply area compared to the former BPDB areas.

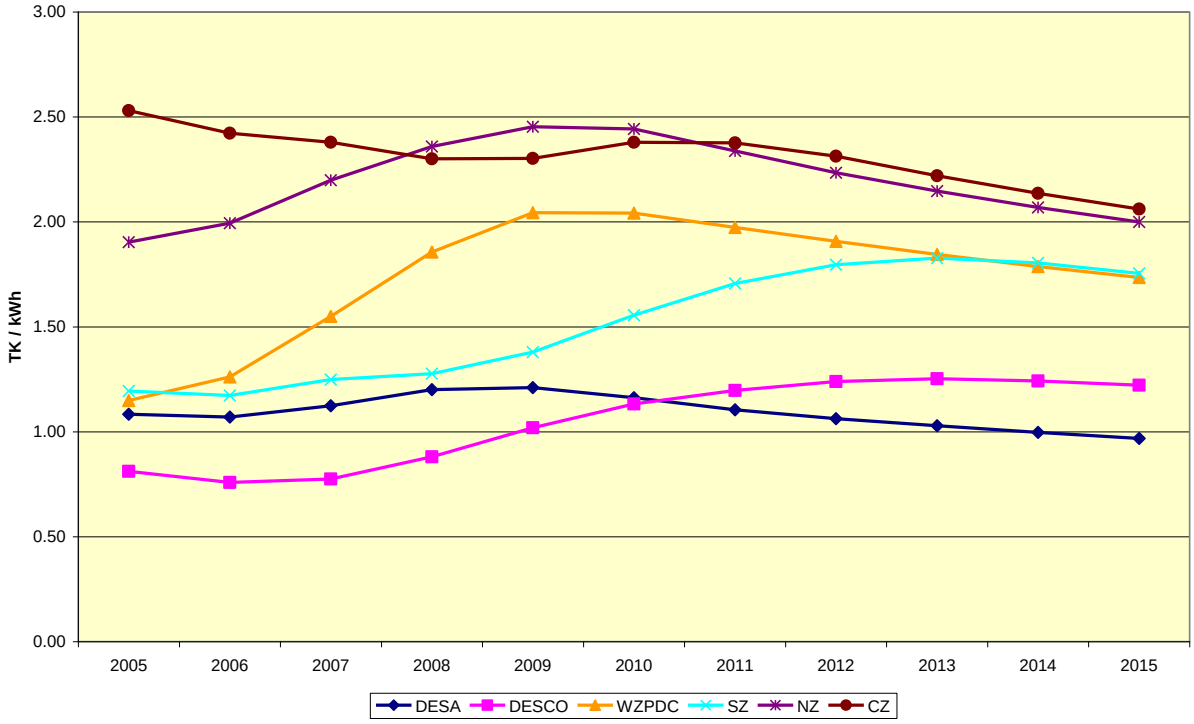


Figure 6-6: Distribution Cost per Distribution Company in nominal terms

We have not received a detailed list of the assets in the various distribution areas, but typically the capital employed in rural areas is higher per sold kWh than in urban areas, which contributes significantly to the cost differences.

	West Zone	North Zone	Central Zone	South Zone	DESA	DESCO
Average consumption per end-use consumer	2,597.9	2,167.3	2,164.3	3,694.0	6,722.7	6,093.6
Average bill per end-use customer	9,094.8	7,355.1	7,290.8	12,856.3	22,709.9	21,680.5
Market Share in Distribution Area	59%	42%	19%	62%	100%	100%

Table 6-16: Structural comparison between the distribution areas

The low market share could actually imply that some of the BPDB distribution infrastructure (mainly on the 33kV and 11kV level) is not only dedicated to the supply of the BPDB customers but as well to supply electricity to the PBS's. As already discussed in Section 2.2.2.1, no wheeling charges for the use of the 33kV and 11kV equipment are charged to the PBS's. However, even the introduction of such a wheeling charge will not mitigate the structural differences.

There are two more observations to be made with respect to the results shown in Figure 6-6:

- The specific distribution cost of DESCO increase above those of DESA in the course of the projection period. This results from the fact that DESCO's present

investment planning is twice as high as the investment planned by DESA in terms of sold electricity sold during the projection period.

- The specific distribution costs of the BPDB supply areas converge during the projection period, whereby the distribution cost of Central Zone and North Zone are nearly at the same level. The distribution cost of West Zone and South Zone with more urban electricity supply are at a comparable level towards the end of the projection period.

It shall be noted, that the allocation of the value of the distribution assets to the successor BPDB-distribution companies has been based on the accounting figures received from BPDB. Considering the weakness of BPDB's accounting system especially with respect to the asset register, the usage of a different allocation mechanism might be used to resolve the large differences in distribution cost. Such allocation mechanism would be based on revenues from end-use customers (or GWh sales to end-use customers) as a reflection of the potential earning value of the distribution area. This will lead to a more equal distribution of the asset values between the BPDB distribution areas, but it will not resolve the large difference in distribution cost between the urban distribution companies (DESA and DESCO) and the BPDB distribution areas.

6.3.5 Total average end-use customer tariffs

As already mentioned in the analysis of the present tariff system, the present end-use customer tariffs are distorted and too low to provide a financially solid basis for commercially successful operation of the power sector.

As shown in Figure 6-7 the average end-use customer tariff needs to be increased from TK/kWh 3.43 by some TK/kWh 1.22 (or 35.6%) to TK/kWh 4.65 to achieve cost recovery across the power sector in the first projection period. In the following years up to 2012 a further increase to TK/kWh 5.81 is projected. After that the tariff will decrease slightly towards the end of the projection period.

In real terms this means that - following its first increase - the average end-use consumer tariff will not increase any further and – after a certain period of stability it will decrease again to a level comparable to the present 2005 average tariff.

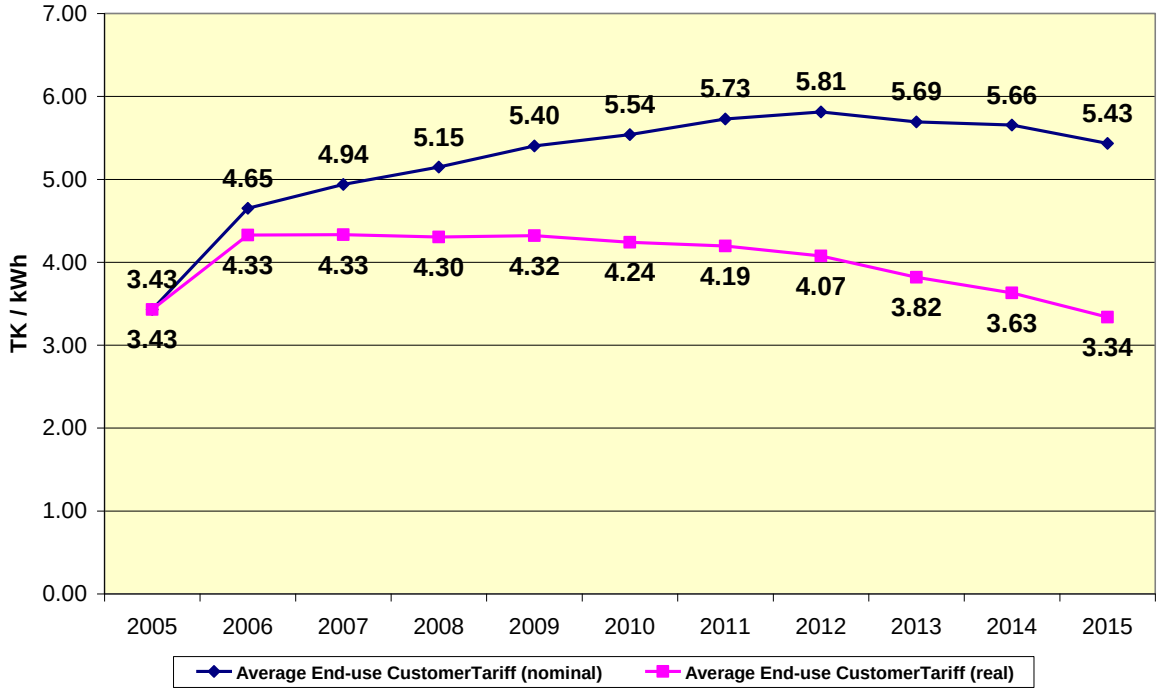
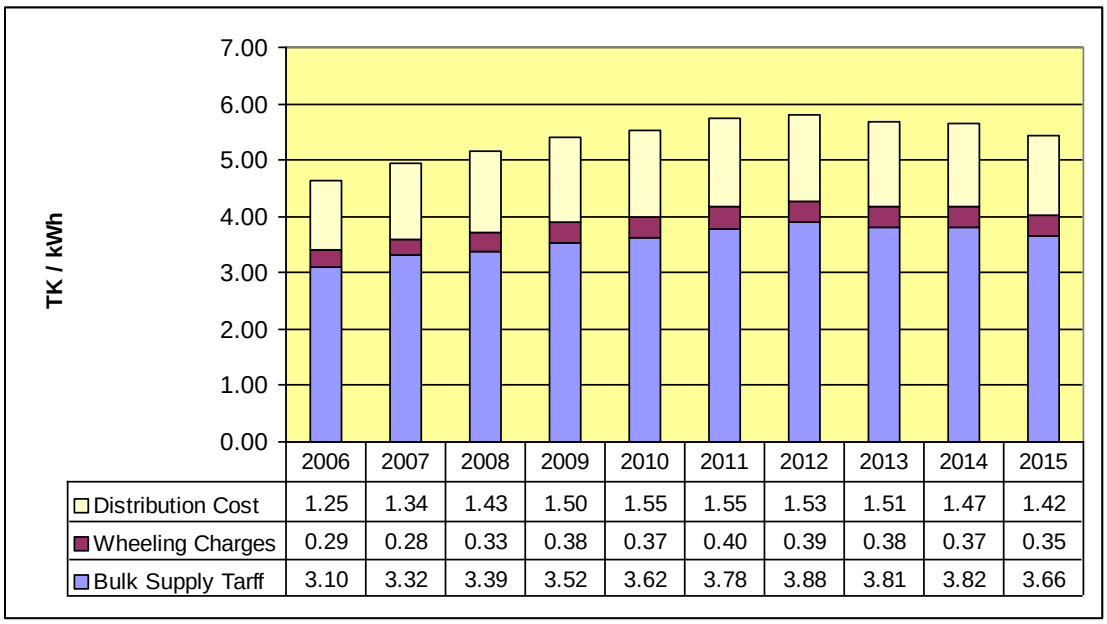


Figure 6-7: Development of average end-use customer tariffs in nominal and real (2005) terms between 2005 and 2015

The end-use customer tariffs are dominated by the cost of power generation, as shown in Figure 6-8. During the whole projection period the portion of the generation cost in the tariff moves in a range on 65% to 67%. This is consequence of the steady improvement of the efficiency in power generation and distribution. The steady increase of the generation cost during the projection period (see Section 6.3.1) is counterbalanced by the reduction of the technical and non-technical losses in the distribution networks.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Distribution Cost	1.25	1.34	1.43	1.50	1.55	1.55	1.53	1.51	1.47	1.42
Wheeling Charges	0.29	0.28	0.33	0.38	0.37	0.40	0.39	0.38	0.37	0.35
Bulk Supply Tarff	3.10	3.32	3.39	3.52	3.62	3.78	3.88	3.81	3.82	3.66

Figure 6-8: Cost structure of the average end-use customer tariffs

6.3.6 Bulk Supply Tariffs

The bulk supply tariff may cover the cost of generation, cost of transmission losses, and the cost of the Single Buyer. The cost of transmission losses is considered indirectly, by applying the bulk supply tariff to the energy imported to distribution, which is less than the energy generated.

As shown in Figure 6-9, the development of the bulk supply tariff closely mirrors the development of the specific cost of net generation, because these constitute the major component of the bulk supply tariff. The small decrease in transmission losses does not have a significant impact on the development of the bulk supply tariff.

In order to achieve cost recovery, the bulk supply tariff needs to increase from currently TK 1.89/kWh by 22% to TK 2.3/kWh in real terms in 2007. It will stay at this level until 2012 and decrease thereafter to TK 1.97/kWh in 2015. In nominal terms the bulk supply tariff is projected to increase to TK 3.31/kWh in 2014, before it decrases.

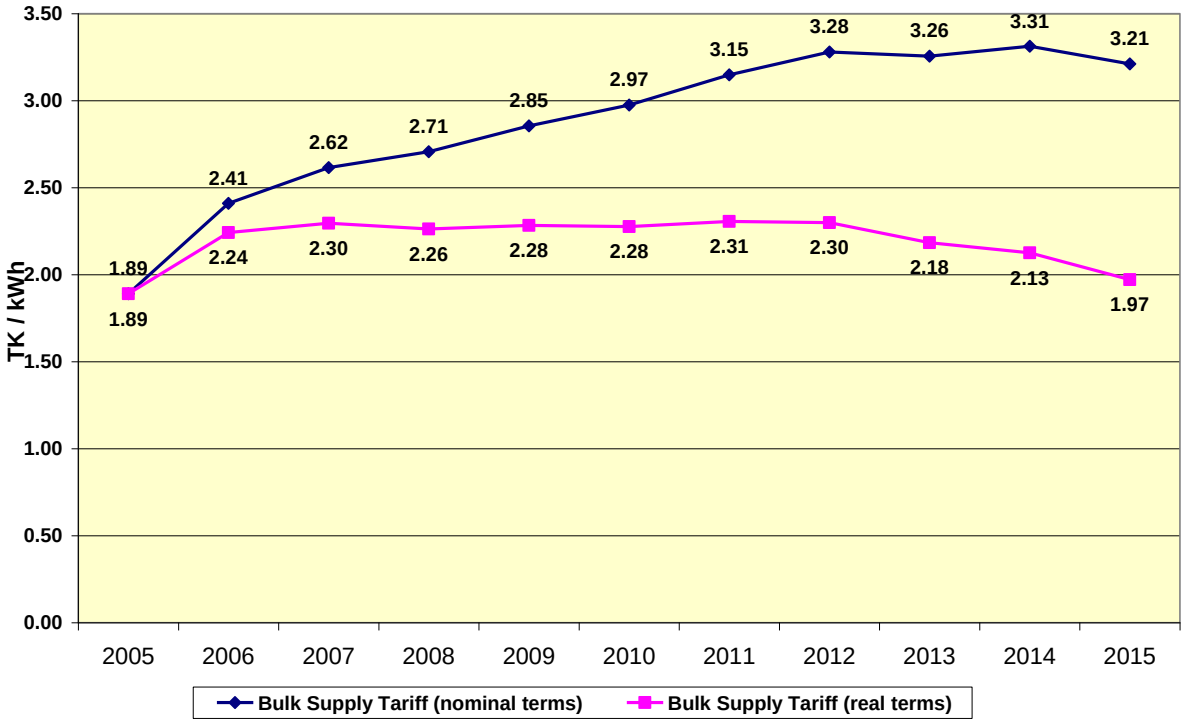


Figure 6-9: Development of the average bulk supply tariff in nominal and real (2005) terms

Currently all distribution companies pay a uniform bulk supply tariff and all distribution companies charge the same uniform end-user tariffs. However, the cost of distribution varies considerably among the companies (see Section 6.3.4 above). As a consequence, the contribution of operating revenues to the recovery of distribution costs also varies among the companies, and some companies may not be able to achieve their commercial targets.

The main reason for the difference in cost of distribution are the differences in load density and consumer mix as well as the differing market share in the supply areas. [14] This cannot be influenced by the distribution companies and therefore may not lead to a disadvantage of the companies. There are two ways to ensure cost coverage of the distribution cost:

- different end-user tariffs for the customers of each distribution company and hence the abolition of the national uniform tariffs, or
- the establishment of cross-subsidies between the distribution companies via different bulk supply tariffs for each distribution company.

It needs to be noted that cross-subsidizing between distribution companies may lead to adverse results. It might end up by an efficient distribution company paying for the inefficiency of another distribution company. This is certainly not a desirable result and can only be avoided if there is close monitoring from the side of the regulatory commission. To achieve an efficient outcome the differential BST and the resulting cross-subsidies would have to be build on clearly defined performance targets and incentive structures over a longer period of 3 years at least.

On the other hand there is some experience within Bangladesh on differential retail tariffs between the PBSs and the other part of the sector. Obviously the population has accepted this and it therefore may be worthwhile to consider the abandonment of the national uniform tariff. This might provide additional incentives to the distribution companies to improve their efficiency and service quality beyond the guidelines provided by the regulator. On the long run – considering the establishment of a competitive wholesale market in Bangladesh – the system of national uniform tariffs will have to be abandoned anyway, since this market will remove the possibility of cross-subsidizing distribution companies (and hence consumers) by adjusting the BST.

At the present stage we have assumed that a differential BST will be easier to administer and that differentiated end-user tariffs may politically not be acceptable at this stage, since they will lead to very significant increases in end-customer tariffs in some distribution areas. Therefore the second option is considered in the financial projections. According to this concept, the Single Buyer charges each distribution company a different bulk supply tariff.

The different Bulk Supply Tariffs are set by weighting it in inverse proportion to the cost of the various distribution companies. In detail the BST is set in such a way that after deducting the bulk purchase payments to the Single Buyer from their revenues, the distribution companies have sufficient funds left to cover all their costs. The individual bulk supply tariff depends on the level of the uniform end-user tariff and the cost structure of the company. or some distribution companies the bulk supply tariff has to be adjusted downwards (equivalent to a subsidy from the Single Buyer), for other upwards (equivalent to net payments to the Single Buyer), as shown in Figure 6-10. Total revenues of the Single Buyer from bulk supply payments are the same, whether the bulk supply tariff is uniform for all distribution companies, or different.

[14]) see as well Section 6.3.4

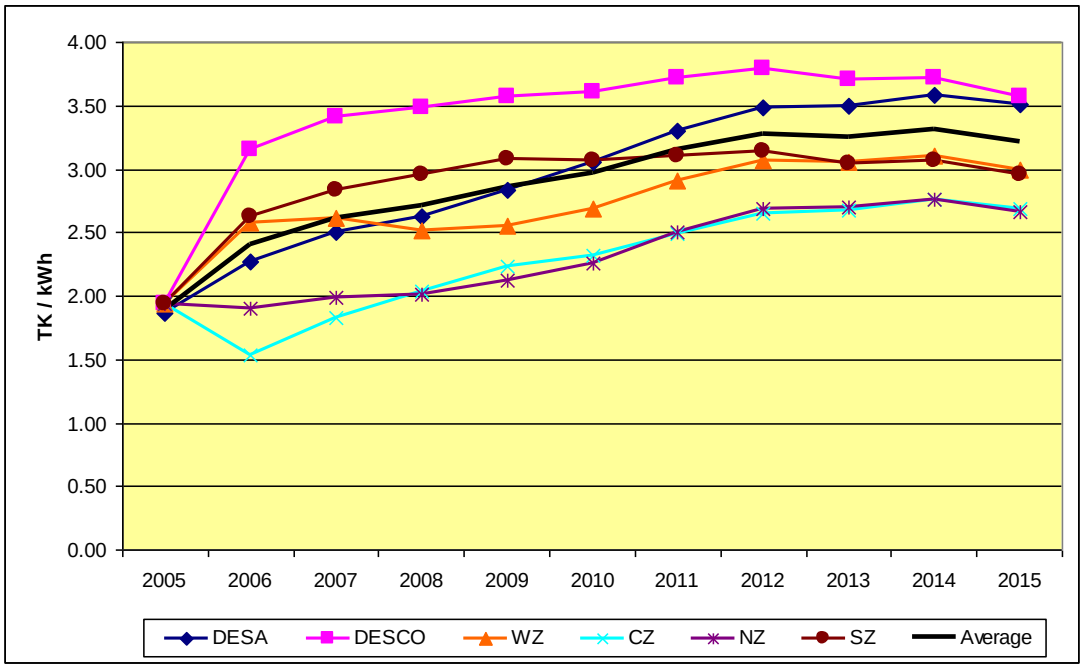


Figure 6-10: Bulk Supply Tariff per Distribution Company in nominal terms

Such differentiated bulk supply tariffs not only provide an opportunity to balance differences in cost structures, but also to subsidize the distribution companies as long as the uniform end-user tariff is below the cost-covering level. In this case the bulk supply tariff of all distribution companies is reduced by the difference between actual and cost-covering end-user tariff (adjusted for the distribution losses).

In consequence this means that the Single Buyer will incur losses in form of the differences between its cost of purchasing power at cost covering tariffs from the generators and the “subsidized” bulk supply tariff charged to the distribution companies. These losses would be in the magnitude of the shortfall of revenues of the power sector resulting from inadequately low increases of the retail tariffs. To recover this shortfall it will be required that the Government steps in by providing subsidies to the poser sector. In our case the actual subsidy is paid to the Single Buyer to make up for the reduced revenues from bulk sales.

This concept, which is applied in the financial projections, has the advantage that there is only one recipient of cash subsidies: the Single Buyer. Generators receive a cost-covering generation tariff from the Single Buyer, the transmission company receives a cost-covering wheeling charge, and the distribution companies are charged individual bulk supply tariffs which allow them full recovery of their costs.

Again, subsidy requirements need to be established on a business case which is based on medium to long term performance and efficiency targets to determine the revenue requirements of the power sector and may only apply for a predetermined transition period. The setting of these performance and efficiency targets again would be a task that needs to be mayered by the regulatory commission.

A summary of generation, transmission, bulk supply and consumer tariffs is provided in Appendix F.

6.4 Results of the Financial Projections for the Power Sector

Financial projections have been prepared for each of the power sector entities and for the consolidated power sector as described in Section 6.1 above. In the following analysis the financial performance of the entities is described using a limited number of key performance ratios, such as

- Profit related ratios:
  - net income,
  - operating ratio;
  - post tax return on equity
  - rate of Return on net fixed assets
- Cash Flow related ratios:
  - Internal Cash Flow
  - Debt Service Coverage Ratio
  - Self Financing Ratio
- Balance Sheet Ratios
  - Debt/ (Debt + Equity) Ratio
  - Current Ratio
  - Quick Ratio
  - Cash at Bank

Details of the financial projections, such as financial statements and additional financial ratios are shown in Appendix G to this report.

The previous section has shown that a significant increase of the end-use customer tariffs is required to achieve full cost recovery across the sector. Despite of the efficiency improvements that have been assumed as a basis for the financial projections an immediate increase of the end-use customer tariffs and of the bulk supply tariffs will be required to support the financial recovery process of the power sector entities. However, it may be difficult to enforce increases of electricity tariffs under the present circumstances, where the quality of power supply across the country has deteriorated in the last years.

For this reason the financial model allows the assessment of the impact of end-use customer tariffs and their development on the financial performance of the power sector and each of the power sector entities. The following tariff scenarios have been considered for this analysis:

(a) Scenario Full cost recovering tariff

The scenario assumes that -starting in FY 2005/06 - the end-use customer tariffs are increased to a level allowing the full recovery of all cost of power generation, transmission and distribution including a return on net fixed assets of 10%, which, in accordance with financial covenants of World Bank and ADB is considered to be commercially reasonable.

(b) Scenario Business as Usual

In this tariff scenario, the present average end-use customer tariff is increased from its present level of TK/kWh 3.43 only in line with inflation. This means that the cost recovering tariff level will only be achieved at the end of the projection period in the year 2015.

(c) Scenario Cost recovering tariff achieved in 2010

In this scenario it is assumed that the present tariff level will be adjusted linearly so that the cost recovery is achieved in the year 2010.

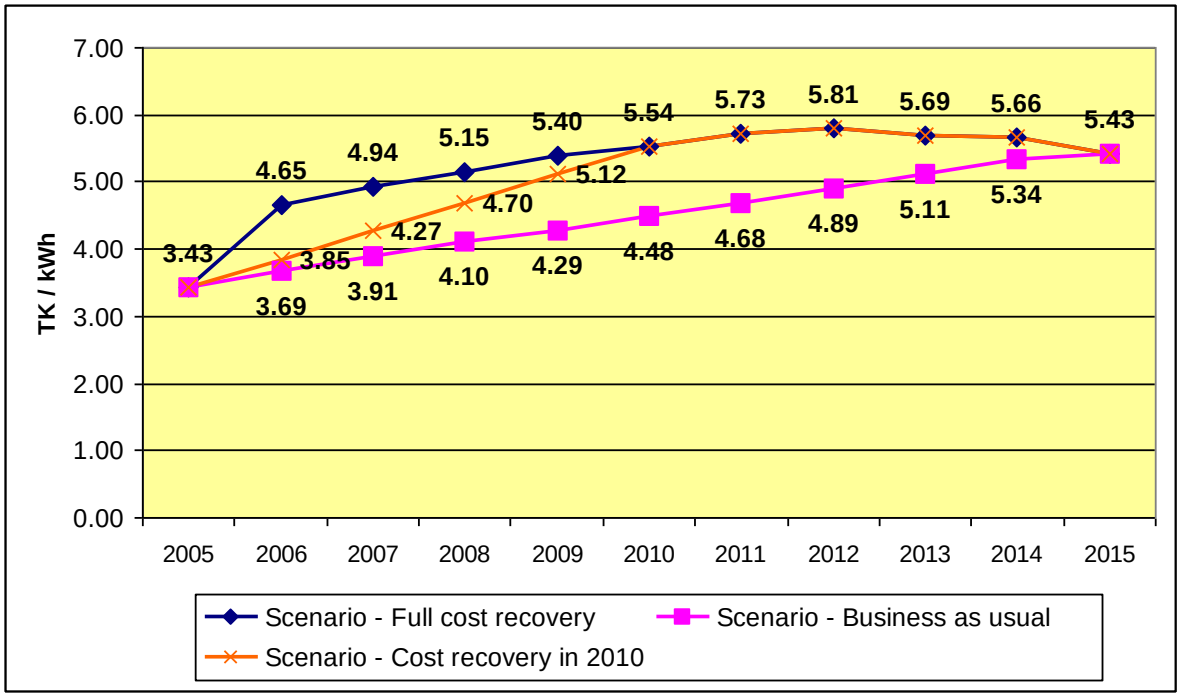


Figure 6-11: Tariff Scenarios for the financial projections

6.4.1 Financial Projections for the Consolidated Power Sector

The financial projections for the consolidated power sector are performed for all three above mentioned tariff scenarios:

6.4.1.1 Tariff Scenario Full cost recovering tariff

In this tariff scenario, the power sector shows high profitability throughout the projection period:

- With improving performance of the power sector entities the post tax return on equity increases from 7.3% to nearly 16% in 2012 and remains at a level which is required to attract private investment in the power sector.
- The operating ratio moves in an optimal range of 0.76 to 0.81 showing that the power sector.
- The rate of return on net fixed assets falls still below its target of 10% but improves from 4.4% to nearly 6% at the end of the projection period.

Financial Performance 'Consolidated Power Sector' Tariff Scenario Full Cost Recovery										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Profit related ratios										
Net Income	3,554	4,662	6,464	7,424	8,231	10,782	12,005	12,465	12,869	13,213
Operating Ratio	0.79	0.78	0.76	0.77	0.77	0.76	0.77	0.79	0.80	0.81
Post Tax Return on Equity	7.35%	9.03%	11.44%	12.27%	12.66%	15.31%	15.72%	15.32%	14.95%	14.56%
Rate of Return on Net Fixed Assets	4.38%	4.70%	4.99%	4.95%	4.81%	5.39%	5.63%	5.74%	5.86%	5.94%
Cash Flow related ratios										
Internal Cash Flow	1,933	4,786	8,102	11,246	10,138	9,185	11,529	7,380	10,069	3,966
Debt Service Coverage Ratio	1.55	1.48	1.55	1.65	1.48	1.54	1.59	1.55	1.55	1.43
Self Financing Ratio	66.3%	32.5%	22.1%	21.1%	29.4%	39.0%	59.4%	88.3%	95.7%	106.2%
Balance Sheet ratios										
Debt : (Debt + Equity)	62%	67%	70%	71%	71%	69%	68%	67%	65%	64%
Current Portion	1.48	1.34	1.37	1.34	1.26	1.33	1.39	1.38	1.36	1.21
Quick Ratio	1.03	0.92	1.01	1.11	1.17	1.24	1.29	1.29	1.27	1.12
Cash at Bank	13,397	9,400	9,904	13,679	15,888	18,679	23,063	24,387	27,580	22,946

Table 6-17: Financial performance ratios for the consolidated power sector under Tariff Scenario Full Cost Recovery

The cash flow situation of the consolidated power sector is not quite as satisfactory as its profit situation.

- The debt service coverage ratio (DSCR), which indicates the capability of the power sector to serve its outstanding interest and principal repayment, is typically expected to be above 1.3. This is achieved most of the time during the projection period with two exceptions. Even in those two cases the DSCR still is above 1.2 and hence at an acceptable level.
- Due to the high investment requirements, the self-financing ratio (SFR) falls below its target of 30% in the early projection period. There is a sharp decline following the first year resulting from the strong increase in investment activities from 2007 onwards. The improvement of the SFR is again due to the reduced investment from 2008 onwards. This is a phenomenon that can be observed quite often in similar cases: a backlog of investment that have been postponed /delayed due to a lack of funding are considered to be started in the next year in addition to the ongoing investment plans. In reality this will hardly take place.

The balance sheet ratios again are highly satisfactory:

- The debt to equity ratio is always better than the 70:30 ratio, which can be considered as an international benchmark in the power sector. This shows that the financial restructuring measures pitched to a 60:40 ratio are sufficient to provide solid ground for future financial performance.
- Current and quick ratio are a sign of liquidity of the power sector. They are expected to be in the range between 1 and 2 throughout the whole projection period.

It can be summarized that – if this tariff scenario is implemented – the power sector in its entirety will be in the position to achieve a highly satisfactory financial performance. With few exceptions, the financial ratios are expected to fulfill the required level during the whole projection period. This means as well that the ambitious investment programs that are envisaged to improve the sector performance could be implemented under the condition, that the required financing can be contributed to the sector either through international donor agencies or through government loans at concessional loan terms of 5%.

6.4.1.2 Tariff Scenario Business as Usual

The Tariff Scenario "Business As Usual" reflects the financial performance of the consolidated power sector if the average end-use tariffs are not increased adequately. It shows clearly that under these circumstances the financial performance of the power sector will not be sustainable and will result in a similar situation as it prevails at present.

The revenues of the power sector are insufficient to cover the operating cost, which shows in the operating ratio below zero. However, the margin is not sufficient to cover the financial cost (interest and exchange rate losses), which finally results in a negative net income before tax.

Despite an improvement of the operating ratio to a level of 0.81 towards the end of the projection period, the net income remains negative, with the exception of the last year. Consequently the return on equity as well as the return on net fixed assets are negative during most of the projection period.

	Financial Performance 'Consolidated Power Sector' Tariff Scenario Business as Usual									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Profit related ratios										
Net Income	-6,302	-7,352	-7,734	-10,054	-11,048	-11,095	-10,708	-5,973	-1,597	4,971
Operating Ratio	0.93	0.92	0.89	0.90	0.89	0.88	0.87	0.85	0.83	0.81
Post Tax Return on Equity	-5.72%	-7.20%	-7.86%	-12.85%	-17.72%	-20.07%	-25.91%	-11.40%	40.11%	151.17%
Rate of Return on Net Fixed Assets	-3.22%	-3.10%	-2.41%	-2.96%	-2.94%	-2.19%	-1.81%	-0.44%	0.82%	2.80%
Cash Flow related ratios										
Internal Cash Flow	-5,674	-6,878	-5,760	-5,317	-8,295	-11,430	-11,177	-11,248	-4,332	-3,830
Debt Service Coverage Ratio	0.87	0.80	0.85	0.87	0.79	0.83	0.87	0.95	1.04	1.09
Self Financing Ratio	66.3%	23.7%	8.4%	8.3%	12.5%	11.7%	25.5%	43.6%	45.3%	52.2%
Balance Sheet ratios										
Debt : (Debt + Equity)	64%	72%	79%	84%	87%	91%	94%	97%	98%	97%
Current Portion	1.17	0.77	0.63	0.48	0.34	0.31	0.28	0.27	0.26	0.26
Quick Ratio	0.72	0.44	0.39	0.35	0.30	0.27	0.24	0.23	0.23	0.23
Cash at Bank	5,790	-8,697	-17,077	-24,677	-36,703	-50,279	-64,625	-78,521	-86,196	-94,944

Table 6-18: Financial performance ratios for the consolidated power sector under Tariff Scenario Business as Usual

For the same reason, the internal cash flow (meaning the cash flow before investment and investment financing) across the power sector remains negative throughout the whole projection period. As a consequence, the power sector entities will not be in the position to generate sufficient cash flow to cover their operating expenses plus their debt service obligations. This is reflected in a debt service coverage ratio below one. In addition to that the sector is not in the position to contribute to the financing of the investment sufficiently, which is reflected in a self-financing ratio (SFR) below 30% for several years. The high SFR in the first year is due to the cash reserves that are presently in the power sector and that will be used for investment financing in the first period of the financial projections.

The current ratio and the quick ratio are below 1 which show that the power sector lacks liquidity to cover its short and medium term liabilities. Sufficient liquidity can only be created if the sector entities are able to raise additional funding to cover the short fall in cash flow by approaching the financial market and to acquire short-term loan facilities. This means that the money to be borrowed by the sector in addition to the loans for investment financing will increase steeply during the projection period. In total the financial model projects short-term loan facilities of some TK 100 billion.

Another possibility would be that the Government provides funding to cover the shortfall resulting from a tariff policy that does not allow tariff increases up to the cost recovering level. Such subsidy would be in the range of TK 130 billion for the whole projection period.

Both ways are hardly possible for the power sector entities.

It therefore can be concluded that, without adequate tariff increases, the power sector will be illiquid within a very short period of time – and the fact that the debt to equity ratio approaches 100% towards the end of the projection period indicates that it will be bankrupt as well. The power sector entities will face a similar situation as they are facing presently and the efforts of the financial restructuring of the balance sheets will be wasted.

6.4.1.3 Tariff Scenario Cost recovering tariff achieved in 2010

This tariff scenario is based on moderate tariff increases can be realized over the coming years so that the cost recovering tariff will be achieved in 2010. This means that the present tariff will grow by 12.3% in the first projection period and in the following periods with growth rates between 11% declining to 8.2% between 2007 and 2010.

The impact of this tariff scenario is shown in Table 6-19.

It is obvious that the higher tariff increases in comparison to tariff scenario 2 have a positive impact on the financial performance of the sector. However, it will not be sufficient to achieve financial sustainability. Again the problem lies mainly in the first critical years following the financial restructuring.

The envisaged tariff increase of above 12% does not provide sufficient revenues to the power sector to cover operating expenses and debt service obligations in the first years of the projection period. Net income and internal cash flow are negative and the debt service coverage ratio is in the rage of 1.

Financial Performance 'Consolidated Power Sector' Tariff Scenario Cost Covering Tariff in 2010										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Profit related ratios										
Net Income	-4,385	-2,571	1,035	3,669	7,368	9,971	11,230	11,741	12,216	12,609
Operating Ratio	0.90	0.87	0.82	0.80	0.77	0.76	0.77	0.79	0.80	0.81
Post Tax Return on Equity	-3.38%	-0.81%	4.62%	8.45%	14.48%	17.69%	18.05%	17.48%	16.90%	16.20%
Rate of Return on Net Fixed Assets	-1.92%	-0.37%	1.65%	2.69%	4.33%	5.00%	5.28%	5.42%	5.57%	5.68%
Cash Flow related ratios										
Internal Cash Flow	-4,141	-2,591	2,423	7,566	9,487	9,022	10,405	6,839	10,033	4,665
Debt Service Coverage Ratio	0.99	1.04	1.22	1.40	1.42	1.47	1.51	1.47	1.48	1.37
Self Financing Ratio	66.3%	25.2%	9.2%	10.7%	16.6%	24.3%	43.0%	67.5%	72.3%	87.2%
Balance Sheet ratios										
Debt : (Debt + Equity)	64%	70%	75%	77%	76%	75%	73%	72%	70%	68%
Current Portion	1.23	0.92	0.91	0.93	0.94	1.08	1.17	1.20	1.23	1.10
Quick Ratio	0.78	0.53	0.59	0.70	0.85	0.99	1.08	1.11	1.14	1.02
Cash at Bank	7,323	-3,267	-3,530	691	5,370	10,089	15,405	17,744	22,400	18,711

Table 6-19: Financial performance ratios for the consolidated power sector under Tariff Scenario Cost Recovering Tariff in 2010

Consequently there is requirement for additional funding from external resources, which could be either borrowed capital from banks or operating subsidies from the

Government of Bangladesh covering the shortfall in revenues caused by the tariffs which are not cost recovering.

However, the projections show that the financial performance of the sector improves with the tariff increases. The major covenants such as the operating ratio, the debt service coverage ratio and the rates of return on equity and on net fixed assets are already at a satisfactory level from the year 2009 onwards.

Nevertheless, the negative cash flow in the first years may be avoided to ensure that sufficient liquidity is available within the sector that - as a minimum requirement - allows for the covering of all operating expenses and debt service payment. This requires an immediate increase of the end-consumer tariff in the first year as a first step, which of cause needs to be followed by additional tariff increases to achieve cost recovery.

6.4.2 Financial Projections for the Power Sector Entities

The financial projections for each of the power sector entities consider the following principles with respect to sector internal money flows:

- The Single Buyer/Market Operator handles all transactions related to buying and selling of electricity and to wheeling services between the various power sector entities as discussed in Section 5.4 of this report.
- Power generation companies are treated in the same way like the IPP's. This means that
  - they receive payment based on the availability of their generation capacity and for the energy that they deliver to the Single Buyer / Market Operator based on economic dispatch;
  - the Single Buyer pays the IPP plants within a credit period of 45 days according to agreed commercial terms set out in long term Power Purchase Agreements; and
  - the payment is always based on an cost recovering generation tariff.
- PGCB receives its payment as well through the Single Buyer based on cost recovering wheeling charges. Like the generation companies, PGCB receives its payment within a credit period of 45 days
- The Single Buyer receives payment from the distribution companies that recover its cost for power purchase from the generators and its own, internal cost for provision of its services as market operator.
- The distribution companies earn their revenues from the sales of electricity to the end-use customers under the respective end-use customer tariffs. Distribution companies purchase the electricity from the Single Buyer on the basis of a cost recovering bulk supply tariff.
- In consequence the Single Buyer as well as the generation companies and PGCB will always be in the position to recover their cost plus an adequate return on their net fixed assets. The distribution companies, however, depend from the tariff policy of the Government of Bangladesh. Any shortfall of cash flow resulting from a difference between the Government approved end-use customer tariffs and the commercially required tariff level will only affect the distribution companies and will not be passed on to the Single Buyer and/or the Generation Companies.
- The Single Buyer/Market Operator on one hand is only a small organization with a negligible asset base and no significant credit rating and on the other hand handles all inter-company transaction in the Bangladesh Power Sector, it needs to be protected against non-payment of bulk electricity supply services that it

provides to the distribution companies. It therefore requires prudential support from the distribution companies and most likely the back-up of a Government guarantee.

These principles form the basis of the financial projections and consequently the financial results for the generation companies, PGCB and the Single Buyer will be to a large extent independent from the end-use customer tariff. Shortfalls in end-use customer tariffs will in the first place affect the distribution companies. Therefore the following analysis of the financial performance is focussed primarily on the financial performance of the distribution companies. The analysis considers the same three tariff scenarios as already described above in Section 6.4.1.

The analysis of the financial results in the following subsections uses five key financial ratios:

- Return on equity;
- Debt : equity ratio;
- Debt service cover ratio
- Operating ratio; and
- Internal cash flow.

The calculations are based on the assumption that the bulk supply tariff is used to balance differences in cost structures and customer mix (average revenues) between the various distribution companies, see Section 6.3.6.

6.4.2.1 Tariff Scenario: Full cost recovering tariff

The implementation of an end-use customer tariff at the cost recovering level in the first year of the financial projections leads to the desired financial results for all distribution companies as shown in Table 6-20.

Financial Performance 'Distribution Companies' Tariff Scenario - Full Cost Recovery										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity	10.1%	11.3%	13.8%	15.9%	16.5%	16.4%	16.2%	16.0%	15.9%	16.0%
Debt / equity ratio	61.8%	67.7%	67.0%	65.6%	64.7%	63.3%	61.8%	60.6%	59.1%	57.8%
Debt service cover ratio	1.40	1.45	1.60	1.67	1.51	1.57	1.64	1.70	1.77	1.52
Operating ratio	0.86	0.86	0.85	0.86	0.87	0.88	0.89	0.89	0.90	0.90
Internal cash flow (Taka million)	-76	1,161	1,574	1,017	410	821	1,064	1,149	1,120	449
DESCO										
Return on equity	9.4%	7.4%	10.2%	12.9%	15.0%	16.5%	17.3%	17.5%	17.3%	16.8%
Debt / equity ratio	61.4%	66.5%	71.3%	75.1%	75.7%	75.7%	75.1%	73.8%	72.3%	70.8%
Debt service cover ratio	2.25	1.62	1.72	1.70	1.47	1.57	1.58	1.59	1.66	1.53
Operating ratio	0.92	0.92	0.91	0.90	0.89	0.89	0.89	0.88	0.89	0.89
Internal cash flow (Taka million)	36	149	292	791	1,057	612	706	815	959	853
WZPDCL										
Return on equity	7.0%	11.4%	14.8%	18.2%	18.5%	17.6%	17.0%	16.5%	16.2%	15.8%
Debt / equity ratio	62.6%	73.9%	76.2%	74.4%	71.9%	69.2%	67.1%	65.3%	63.7%	61.9%
Debt service cover ratio	1.50	1.63	1.82	1.64	1.50	1.42	1.47	1.51	1.56	1.60
Operating ratio	0.89	0.86	0.82	0.81	0.82	0.83	0.85	0.85	0.86	0.87
Internal cash flow (Taka million)	105	355	709	906	941	496	403	419	414	454
CZPDCL										
Return on equity	14.4%	15.4%	15.6%	16.0%	16.5%	17.6%	18.0%	17.5%	17.2%	16.7%
Debt / equity ratio	56.8%	55.6%	56.4%	59.4%	60.5%	58.9%	57.1%	55.6%	54.0%	52.3%
Debt service cover ratio	2.09	2.11	2.19	2.22	2.26	1.93	2.03	2.08	2.13	2.17
Operating ratio	0.76	0.78	0.80	0.80	0.80	0.80	0.81	0.82	0.83	0.84
Internal cash flow (Taka million)	659	637	632	788	946	441	588	572	684	658
NZPDCL										
Return on equity	10.1%	12.3%	14.2%	15.5%	15.4%	15.4%	14.9%	14.5%	14.1%	13.8%
Debt / equity ratio	60.1%	64.3%	65.5%	63.7%	60.6%	59.9%	57.3%	56.4%	54.5%	53.3%
Debt service cover ratio	1.84	1.74	1.88	1.98	1.85	1.74	1.75	1.80	1.84	1.88
Operating ratio	0.81	0.79	0.78	0.79	0.80	0.82	0.84	0.85	0.86	0.86
Internal cash flow (Taka million)	607	699	995	1,286	1,376	123	846	370	809	489
SZPDCL										
Return on equity	8.0%	11.1%	11.4%	12.5%	13.5%	15.1%	15.9%	16.1%	16.2%	16.0%
Debt / equity ratio	58.7%	58.0%	58.5%	63.6%	67.0%	67.4%	67.3%	65.3%	64.1%	62.8%
Debt service cover ratio	1.76	1.83	1.66	1.75	1.82	1.69	1.83	1.58	1.66	1.69
Operating ratio	0.89	0.88	0.88	0.88	0.86	0.85	0.84	0.84	0.84	0.85
Internal cash flow (Taka million)	1,208	1,144	1,188	1,465	1,994	1,382	1,877	1,544	1,288	1,209

Table 6-20: Financial Performance of Distribution Companies under the Tariff Scenario – Full Cost Recovering Tariff

The financial results move for all distribution companies in the same range for nearly all ratios. Differences result mainly from the level of the ongoing and planned investment, which is very high in the case of DESCO and therefore leads to deterioration of the debt : equity ratio.

We want to use this scenario to show the effect on the financial results of the distribution companies if the uniform bulk supply tariff **and** the uniform end-use customer tariff is maintained, see Table 6-21:

- DESA, due to its bad technical and commercial performance improves its financial viability during the projection period as their performance improves. The expected return on equity lies above 25%, whilst the debt service cover ration exceeds 2 and the operating ratio falls below 0.85 with improving efficiency.
- DESCO on the other hand starts from its present high level financial performance. Due to the comparably high planned investment, the cost structure of DESCO changes leading to a deterioration of some of the financial ratios. Nevertheless, its financial performance is still projected to be far above average. It can be noted that the financial performance of DESCO and DESA towards the end of the projection period are comparable.
- The former BPDB supply areas show by far less favorable results. Mainly Central Zone PDC and North Zone PDC show that uniform bulk supply tariffs together with uniform end-use customer tariffs do not provide a basis for financially sustainability in their supply areas.

Financial Performance 'Distribution Companies' Tariff Scenario - Full Cost Recovery										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity	3.2%	6.0%	10.3%	16.1%	21.2%	24.3%	26.2%	27.5%	28.1%	28.4%
Debt / equity ratio	62.9%	69.5%	69.7%	67.8%	66.0%	63.7%	61.5%	59.8%	57.4%	55.1%
Debt service cover ratio	1.03	1.18	1.40	1.62	1.65	1.87	2.09	2.29	2.47	2.21
Operating ratio	0.91	0.89	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.84
Internal cash flow (Taka million)	-402	676	1,165	1,249	841	1,213	1,448	1,500	1,853	1,402
DESCO										
Return on equity	48.6%	42.6%	39.4%	36.0%	33.2%	31.1%	29.0%	27.1%	25.6%	24.0%
Debt / equity ratio	55.4%	56.3%	59.2%	60.3%	60.9%	61.0%	60.8%	59.8%	58.8%	57.8%
Debt service cover ratio	5.42	4.10	4.00	3.58	2.80	2.78	2.71	2.61	2.64	2.36
Operating ratio	0.74	0.74	0.74	0.75	0.76	0.78	0.79	0.80	0.81	0.81
Internal cash flow (Taka million)	709	1,101	1,053	1,664	1,445	1,097	1,053	1,200	1,219	1,150
WZPDCL										
Return on equity	13.5%	10.9%	7.0%	6.5%	8.2%	9.8%	10.6%	10.4%	9.7%	8.6%
Debt / equity ratio	61.7%	73.0%	76.2%	75.8%	74.6%	73.1%	71.5%	69.9%	68.4%	66.7%
Debt service cover ratio	1.91	1.63	1.51	1.25	1.16	1.13	1.19	1.22	1.23	1.23
Operating ratio	0.85	0.86	0.87	0.87	0.88	0.88	0.89	0.89	0.90	0.91
Internal cash flow (Taka million)	225	403	543	558	550	133	231	313	350	393
CZPDCL										
Return on equity	-6.9%	-4.6%	-1.6%	-0.5%	-2.0%	-1.2%	0.3%	1.3%	1.8%	1.4%
Debt / equity ratio	60.6%	61.9%	64.1%	69.4%	72.3%	72.2%	71.9%	71.5%	71.0%	70.4%
Debt service cover ratio	0.82	0.94	1.12	1.20	1.19	1.04	1.09	1.12	1.15	1.16
Operating ratio	0.99	0.97	0.95	0.93	0.93	0.93	0.93	0.93	0.94	0.94
Internal cash flow (Taka million)	79	165	343	444	537	87	167	216	254	291
NZPDCL										
Return on equity	-3.1%	-4.9%	-6.4%	-7.5%	-8.0%	-6.8%	-6.7%	-8.9%	-12.9%	-20.7%
Debt / equity ratio	62.3%	70.0%	75.0%	77.6%	78.4%	79.0%	80.1%	81.4%	83.3%	85.9%
Debt service cover ratio	1.04	0.90	0.92	0.94	0.87	0.83	0.83	0.82	0.79	0.74
Operating ratio	0.94	0.95	0.94	0.95	0.95	0.95	0.95	0.96	0.96	0.97
Internal cash flow (Taka million)	193	37	158	305	302	-251	-262	-252	-297	-384
SZPDCL										
Return on equity	15.4%	18.0%	19.3%	18.6%	15.2%	12.2%	9.9%	8.3%	7.5%	6.8%
Debt / equity ratio	57.6%	56.6%	55.8%	59.8%	62.3%	63.3%	63.9%	63.0%	62.3%	61.5%
Debt service cover ratio	2.30	2.34	2.20	2.22	2.05	1.67	1.65	1.34	1.35	1.35
Operating ratio	0.83	0.83	0.82	0.83	0.84	0.86	0.87	0.88	0.89	0.90
Internal cash flow (Taka million)	1,546	1,315	1,765	2,045	2,366	1,389	1,553	1,003	1,080	1,090

Table 6-21: Financial Performance of Distribution Companies – Uniform Bulk Supply Tariff and Uniform End-Use Customer Tariff (Full Cost Recovering Tariff)

This shows clearly, that the two distribution companies covering the supply area of Dhaka are benefiting from the different supply structures, the related low specific cost of supply and the different customer mix compared to the former BPDB distribution companies. For this reason we suggest to use the bulk supply tariff as the balancing mechanism to allow all distribution areas to conduct their business on a financially viable basis.

6.4.2.2 Tariff Scenario: Business as Usual

Table 6-22 shows the impact of the Tariff Scenario “Business as Usual” on the financial performance of the distribution companies.

Financial Performance 'Distribution Companies' Tariff Scenario - Business as Usual										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity	-27.8%	-52.9%	-143.1%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Debt / equity ratio	69.5%	84.6%	97.3%	116.4%	147.4%	210.5%	366.6%	794.9%	#######	-4101.9%
Debt service cover ratio	-0.37	-0.36	-0.22	-0.27	-0.23	-0.26	-0.16	0.15	0.39	0.70
Operating ratio	1.10	1.09	1.08	1.09	1.09	1.09	1.07	1.01	0.96	0.90
Internal cash flow (Taka million)	-2,769	-3,204	-3,681	-4,961	-6,246	-7,424	-7,947	-6,769	-5,380	-3,289
DESCO										
Return on equity	-53.6%	-179.4%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Debt / equity ratio	74.5%	98.6%	122.4%	146.5%	177.7%	219.4%	282.3%	356.0%	419.8%	426.0%
Debt service cover ratio	-1.21	-1.08	-0.69	-0.44	-0.16	-0.07	0.09	0.39	0.62	0.78
Operating ratio	1.14	1.15	1.13	1.11	1.08	1.07	1.04	0.97	0.93	0.89
Internal cash flow (Taka million)	-1,169	-1,731	-1,990	-2,004	-2,085	-2,953	-3,067	-2,488	-1,762	-1,194
WZPDCL										
Return on equity	-28.4%	-44.1%	-87.2%	-1295.7%	n.a.	n.a.	n.a.	n.a.	n.a.	-2.2%
Debt / equity ratio	70.0%	87.0%	95.6%	103.4%	112.7%	126.0%	143.0%	156.9%	164.6%	163.8%
Debt service cover ratio	-0.35	0.00	0.31	0.34	0.35	0.29	0.33	0.56	0.74	0.96
Operating ratio	1.12	1.07	1.02	1.01	1.00	1.01	1.00	0.94	0.90	0.87
Internal cash flow (Taka million)	-774	-967	-825	-900	-1,053	-1,736	-1,785	-1,324	-791	-148
CZPDCL										
Return on equity	-4.4%	-6.0%	-8.4%	-13.8%	-16.1%	-19.1%	-17.7%	4.6%	25.8%	42.6%
Debt / equity ratio	60.0%	61.7%	65.4%	73.6%	79.4%	82.3%	84.8%	84.5%	82.3%	78.0%
Debt service cover ratio	0.95	0.86	0.80	0.69	0.79	0.71	0.81	1.11	1.42	1.82
Operating ratio	0.95	0.98	0.99	1.01	0.98	0.98	0.96	0.91	0.88	0.84
Internal cash flow (Taka million)	226	118	102	11	118	-333	-224	128	432	797
NZPDCL										
Return on equity	-11.2%	-14.0%	-17.6%	-26.7%	-37.9%	-75.5%	-318.3%	n.a.	n.a.	-136.2%
Debt / equity ratio	64.2%	73.8%	80.2%	85.2%	89.1%	94.7%	101.3%	105.2%	105.6%	102.2%
Debt service cover ratio	0.59	0.57	0.65	0.63	0.59	0.48	0.49	0.73	0.94	1.27
Operating ratio	1.02	1.00	0.98	0.99	0.99	1.01	1.00	0.94	0.91	0.86
Internal cash flow (Taka million)	-72	-351	-221	-171	-241	-965	-1,055	-618	-123	385
SZPDCL										
Return on equity	-23.2%	-33.1%	-63.9%	-290.4%	n.a.	n.a.	n.a.	n.a.	n.a.	-3.5%
Debt / equity ratio	65.4%	73.5%	86.8%	102.0%	113.8%	125.7%	137.0%	146.6%	150.7%	148.5%
Debt service cover ratio	-0.22	-0.21	-0.17	-0.14	0.10	0.21	0.37	0.60	0.79	1.00
Operating ratio	1.12	1.11	1.10	1.10	1.06	1.03	1.00	0.93	0.89	0.85
Internal cash flow (Taka million)	-510	-1,385	-1,858	-2,286	-2,203	-3,329	-3,143	-2,690	-1,502	-236

Table 6-22: Financial Performance of Distribution Companies under the Tariff Scenario – Business as Usual

The scenario shows that without a substantial tariff increase, most of the distribution companies will not be able

- to generate a positive internal cash flow during the whole projection period;
- to recover their operating expenses (operating ratio above one); and
- to pay the debt service (debt service cover ratio below one).

In most of the cases the distribution companies will be bankrupt within two to three years, indicated by a debt portion exceeding the equity in the company. This situation will lead inevitably to a bankruptcy of the whole power sector and destroy all positive effects that result from the financial restructuring.

6.4.2.3 Tariff Scenario: Cost recovering tariff achieved in 2010

The tariff scenario which introduces cost recovering tariffs gradually up to the year 2010 also indicates that there will be significant problems within the first years up to the achievement of cost recovering tariffs, as shown in Table 6-23.

Financial Performance 'Distribution Companies' Tariff Scenario - Cost Covering Tariff in 2010										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity	-20.0%	-21.5%	-11.9%	2.7%	26.7%	24.9%	23.7%	22.6%	21.7%	20.7%
Debt / equity ratio	67.9%	78.5%	81.9%	82.0%	80.0%	77.9%	75.9%	74.0%	71.6%	68.7%
Debt service cover ratio	-0.06	0.26	0.71	1.00	1.31	1.35	1.41	1.47	1.54	1.35
Operating ratio	1.05	1.00	0.94	0.91	0.87	0.88	0.89	0.89	0.90	0.90
Internal cash flow (Taka million)	-2,212	-1,615	-606	30	561	808	1,017	1,278	1,485	955
DESCO										
Return on equity	-40.7%	-66.8%	-112.9%	-508.9%	-1798.4%	205.5%	105.8%	74.1%	56.6%	45.4%
Debt / equity ratio	71.8%	87.0%	97.3%	100.9%	99.5%	97.8%	96.1%	94.3%	92.3%	90.2%
Debt service cover ratio	-0.65	-0.16	0.48	0.88	1.24	1.31	1.33	1.34	1.37	1.27
Operating ratio	1.10	1.06	0.99	0.95	0.89	0.89	0.89	0.88	0.89	0.89
Internal cash flow (Taka million)	-954	-1,118	-786	-18	751	368	443	511	600	445
WZPDCL										
Return on equity	-21.6%	-18.6%	-6.6%	11.0%	31.5%	29.1%	26.1%	23.5%	21.6%	19.9%
Debt / equity ratio	68.5%	82.8%	86.6%	86.4%	84.0%	81.2%	78.3%	75.3%	72.4%	69.3%
Debt service cover ratio	-0.04	0.53	1.06	1.20	1.39	1.34	1.36	1.39	1.43	1.47
Operating ratio	1.07	0.99	0.90	0.85	0.82	0.83	0.85	0.85	0.86	0.87
Internal cash flow (Taka million)	-611	-503	69	459	763	400	457	527	590	690
CZPDCL										
Return on equity	-1.0%	2.4%	6.9%	11.2%	18.7%	19.7%	19.9%	19.4%	18.9%	18.3%
Debt / equity ratio	59.2%	59.1%	59.8%	63.5%	63.3%	62.1%	59.7%	58.6%	56.4%	55.0%
Debt service cover ratio	1.14	1.30	1.58	1.82	2.24	1.91	2.02	2.06	2.11	2.16
Operating ratio	0.92	0.90	0.87	0.85	0.80	0.80	0.81	0.82	0.83	0.84
Internal cash flow (Taka million)	340	392	570	562	1,120	315	701	448	795	536
NZPDCL										
Return on equity	-7.2%	-3.0%	4.4%	11.1%	19.5%	18.2%	17.4%	16.9%	16.5%	16.0%
Debt / equity ratio	63.3%	70.7%	73.8%	73.3%	70.0%	67.0%	65.5%	63.5%	62.0%	59.9%
Debt service cover ratio	0.81	0.98	1.32	1.57	1.72	1.59	1.58	1.62	1.66	1.70
Operating ratio	0.98	0.92	0.86	0.83	0.80	0.82	0.84	0.85	0.86	0.86
Internal cash flow (Taka million)	81	75	516	923	1,214	719	293	508	409	625
SZPDCL										
Return on equity	-17.3%	-13.2%	-6.8%	2.4%	20.7%	22.8%	23.2%	22.9%	22.0%	20.4%
Debt / equity ratio	64.0%	67.9%	73.5%	79.7%	81.4%	80.6%	79.6%	77.2%	74.7%	71.9%
Debt service cover ratio	0.11	0.50	0.80	1.13	1.65	1.51	1.57	1.38	1.45	1.48
Operating ratio	1.07	1.02	0.97	0.92	0.86	0.85	0.84	0.84	0.84	0.85
Internal cash flow (Taka million)	-178	-464	-52	618	1,664	1,101	1,448	1,054	1,360	1,560

Table 6-23: Financial Performance of Distribution Companies under the Tariff Scenario – Cost covering Tariffs in 2010

- All companies with the exception of Central Zone PDC and North Zone PDC create significant losses within the first three to four years, which in the case of DESCO may even result in bankruptcy.
- The distribution companies can expect a strongly negative internal cash flow during that period which does not allow them to pay for their operating expenses and debt service.
- The illiquidity of the distribution companies will negatively impact the other participants in the power sector so that the desired turn-around of the present situation cannot be achieved.

6.4.2.4 Conclusion

Considering the Power Sector in its entirety does not reveal the whole picture. On a consolidated basis the losses from inadequate end-use customer tariffs are compensated from profits in the generation and transmission segment of the power sector. However, inadequate tariffs will, in the first place affect the distribution segment and lead there to a similar situation than the one prevailing today:

- despite all efforts to improve efficiency and performance, the distribution companies will not be in the position to collect sufficient money to pay for their operating expenses and their debt service;
- in consequence the upstream segments of the power sector (generation and distribution) will not receive sufficient money; which
- in turn will lead to a continuation of the maintenance backlog in the generation segment and even worse in delays in the financing of important investment in the enhancement and improvement of the system.

It therefore can be concluded that – under any circumstances – the increase of the end-use customer tariffs is a pre-requisite to the financial recovery of the power sector. The improvement of the sector performance and efficiency together with the proposed financial restructuring measures described in section 4 will not lead to sufficient cost reductions to allow the sector entities to improve their financial situation in the short term.

However, these first years are of utmost importance to the power sector. Improvement of the quality of power supply to end-use customers needs to be achieved fast to improve acceptance of tariff increases. Performance and efficiency improvements on the other hand will require significant investment in the first place in power generation capacity, and in consequence in the downstream transmission and distribution equipment. The projections assume that investment of TK 165.9 billion (US$ 2.4 billion) will be required for rehabilitation of existing and installation of new power generation capacity in the coming four years. In addition to that some TK 50 billion (US$ 0.7 billion) will have to invested in the expansion of the transmission system and TK 77.8 billion (US$ 1.1 million) in the rehabilitation, enhancement and expansion of the distribution system.

It is finally a decision to be taken by the Government to what extent a tariff increase can be enforced in Bangladesh given the present quality of supply. The financial projections show that even a gradual increase of tariffs with the objective to achieve full cost recovery in 2010 will create serious problems in the distribution companies, which could – in consequence – result in a similar situation that the power sector is facing today.

This is a typical conflict that power utilities across third world countries are facing nearly everywhere in the world. They are tied up between the necessity to operate on a commercial and financially viable basis and the tariff setting from the Government considering political objectives. The Government has established tariff-setting principles in September 2003[15] which indicate, that

- end-use customer tariffs need to recover all reasonable cost (on the level of each customer class); and

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[15]) see Section 2.1.6.1

- that – may the Government decide to subsidize tariff groups or customer classes; it will do so from its own budget.

In consequence this means, that the state budget may actually subsidize the difference between cost covering tariff and the actual tariff level. The following Table 6-24 shows the funding gap required to cover the difference between revenue requirements and the revenues achieved from sales. We have added two scenarios to show the funding gap if cost recovering tariffs are achieved in 2008 and 2012 as an addition to the tariff scenarios used in the Sections above.

	Funding Gap under Tariff Scenario in million TK			
		Cost recovering tariff achieved in year		
	Business as usual	in 2008	in 2010	in 2012
DESA	49,834	4,215	9,989	18,250
DESCO	19,101	1,824	4,308	7,822
WZPDC	13,847	1,319	3,090	5,580
SZ	9,236	872	2,043	3,688
NZ	12,838	1,170	2,742	4,951
CZ	28,188	2,661	6,236	11,261
Total shortfall in funding	133,045	12,061	28,408	51,552

Table 6-24: Funding Gap for different transition periods to achieve full cost recovering tariffs

It will be necessary to establish a transparent mechanism to determine this subsidies and to feed them to the power sector. As discussed above, we suggest, that the subsidy requirements need to be established on a business case which is based on medium to long term performance and efficiency targets to determine the revenue requirements of the power sector and may only apply for a predetermined transition period. The setting of these performance and efficiency targets again would be a task that needs to be mayered by the regulatory commission.

The subsidies may be fed into the system via the Single Buyer (which will most likely remain in state ownership) and passed on to the distribution companies through the Bulk Supply Tariff.

This concept, which is applied in the financial projections, has the advantage that there is only one recipient of subsidies: the Single Buyer and the administrative effort to determine differentiated bulk supply tariffs can be used to determine the subsidy requirement as well. In this case, generators receive a cost-covering generation tariff from the Single Buyer, the transmission company receives a cost-covering wheeling charge, and the distribution companies are charged individual bulk supply tariffs which allow them full recovery of their costs if they comply with their performance targets.

We have assumed in the financial projections attached to this report as Appendix G that the Government will provide the differences between the actual tariff and the cost covering tariff as subsidies. The impact of such subsidies to cover the funding gap on the state budget is shown in Section 6.4.3.

The subsidies will not be paid directly to the distribution companies but to the Single Buyer / Market Operator who will pass them on indirectly via the Bulk Supply Tariff. The results of this calculations can be found in Appendix H to this report containing

the key financial indicators for the sector and each of the power sector entities for the Tariff Scenario Cost Covering Tariff in 2010.

6.4.3 Impact on the Government Budget

Presently the Government faces an adverse financial impact on the state budget resulting from the dismal financial performance of some power sector entities. The financial restructuring and recovery measures will have a positive impact, because they will enable the sector entities to service their debts, pay taxes on their income and even pay dividends, once their financial situation has stabilized. Depending on the tariff level, however, subsidy payments will be required.

6.4.3.1 Subsidies

Only when end-user tariffs are increased to full cost recovery level immediately in FY 2005/06, the sector entities do not have to be supported by the Government via subsidies. Assuming that the tariffs remain at their current level and are only increased in line with inflation, subsidies of TK 11 billion would be required in FY 2005/06 to make the sector entities viable. Under this Business As Usual Scenario, subsidy requirements are projected to increase to almost TK 20 billion in FY 2010/11, before they decrease (see Table 6-25). When tariffs are increased to reach cost recovery level in 2010, subsidies of TK 9 billion are required in FY 2005/06, decreasing to TK 4 billion in 2008/09. No further subsidies would be required thereafter.

	Subsidies Paid to the Single Buyer Depending on Tariff Scenario in million Taka									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Scenario Full Cost Recovery	0	0	0	0	0	0	0	0	0	0
Scenario Business as Usual	11,082	13,091	14,662	17,233	18,048	19,524	18,843	13,022	7,715	0
Scenario Cost Recovery in 2010	9,189	8,444	6,361	4,414	0	0	0	0	0	0

Table 6-25: Subsidies paid depending on the tariff scenario

6.4.3.2 Equity contributions and loans

The financial projections are based on the assumptions (see Section 6.2.7) that new investments will be financed by foreign loans, internal funds and local loans. Government equity is no longer considered, since after financial restructuring and during the process of financial recovery the sector entities may no longer rely on equity contributions from the Government.

As shown in Table 6-26, existing foreign loans will continue to be disbursed until FY 2008/09, amounting to TK 39 million in total. New investments require new foreign loans in the range of TK 20-30 billion annually, with a peak of TK 33 billion in FY 2008/09. New local loan disbursements by the Government are mainly required in the next four years until FY 2008/09; thereafter loan disbursements by the Government will decline to a range of TK 1 to 3 billion annually.

These loan disbursements by the Government (onlending of foreign loans and provision of local loans) are balanced by debt service payments for the old and new loans. Following the recommendations for financial restructuring, this debt service comprises principal and interest payments for a reduced loan balance, but in contrast to the current situation, sector entities will actually be able to service the debt instead

of accumulating DSL. Until FY 2008/09 total loan disbursements by the Government exceed debt service from the sector entities, but thereafter inflows from debt service exceed outflow from loan disbursements. More details are shown Appendix I.

Loan Disbursements and Debt Service in million Taka										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Disbursement of loans										
Foreign loans in disbursement	9,938	16,140	8,883	4,110	0	0	0	0	0	0
New foreign loans	5,554	18,912	28,313	33,351	24,699	18,876	19,655	16,333	18,518	22,501
New local loans	7,034	16,292	12,534	9,598	2,726	1,694	1,429	942	1,059	1,043
Subtotal disbursement of loans	22,526	51,344	49,730	47,059	27,425	20,570	21,084	17,276	19,577	23,544
Total repayment of loans	9,806	11,942	13,044	13,322	17,333	20,506	21,623	23,662	24,669	27,716
Total interest payments	6,676	8,121	10,256	11,995	13,814	14,248	14,554	14,586	14,503	14,478
Subtotal debt service	16,482	20,062	23,299	25,317	31,147	34,754	36,178	38,247	39,172	42,194

Table 6-26: Loan disbursements and debt service

6.4.3.3 Taxes and dividends

Currently the sector entities do not pay any taxes. The financial projections confirm that the restructured entities will have sufficient income to pay taxes. Tax payments of all sector entities are projected to increase from TK 2.8 billion to TK 8.7 billion over the projection period, as shown in Table 6-27.

Sector entities will even be able to pay dividends to their public shareholders. Under the assumptions applied in the financial projections (see 6.2.8), dividend payments increase fom around Tk 1 billion to TK 6.5 billion over the projection period.

Tax and dividend payments are similar for all tariff scenarios, since it is assumed that the sector entities receive either cost covering revenues or subsidies.

Tax and Dividend Payments in million Taka										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Tax received	2,880	3,574	4,507	5,098	5,526	7,096	7,888	8,203	8,482	8,731
Dividends received	0	1,190	659	914	1,582	1,591	1,827	5,725	3,633	6,548

Table 6-27: Taxes and dividends payments

6.4.3.4 Net impact

All cash flows between the Government and the sector entities are summarized in Table 6-28. Projections of loan disbursements and debt service, taxes and dividends are similar for all tariff scenarios, while the subsidy requirements depend on the tariff scenario.

Under the Full Cost Recovery Scenario, outflows from the Government budget exceed inflows until FY 2008/09 (the net outflow totalling TK –66 billion), but thereafter net receipts are positive and increase to over TK 30 billion annually.

Under the Business As Usual Scenario annual net outflows are much higher (totalling TK -129 billion until FY 2009/10).

	Total Impact on Government Budget in millionTaka									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Subsidies paid - Full Cost Recovery	0	0	0	0	0	0	0	0	0	0
Subsidies paid - Business as Usual	-11,082	-13,091	-14,662	-17,233	-18,048	-19,524	-18,843	-13,022	-7,715	0
Subsidies paid - Cost Recovery in 201(	-9,189	-8,444	-6,361	-4,414	0	0	0	0	0	0
Loans disbursed	-22,526	-51,344	-49,730	-47,059	-27,425	-20,570	-21,084	-17,276	-19,577	-23,544
Debt service received	16,482	20,062	23,299	25,317	31,147	34,754	36,178	38,247	39,172	42,194
Tax received	2,880	3,574	4,507	5,098	5,526	7,096	7,888	8,203	8,482	8,731
Dividends received	0	1,190	659	914	1,582	1,591	1,827	5,725	3,633	6,548
Net receipts (payments)										
Full Cost Recovery	-3,164	-26,518	-21,264	-15,730	10,830	22,872	24,808	34,900	31,709	33,929
Business as Usual	-14,245	-39,610	-35,926	-32,963	-7,218	3,348	5,965	21,878	23,994	33,929
Cost Recovery in 2010	-12,353	-34,963	-27,625	-20,144	10,830	22,872	24,808	34,900	31,709	33,929

Table 6-28: Total impact on Government budget – Business as Usual tariff scenario

When cost recovery of tariffs is achieved until 2010, net outflows total TK -95 billion, before the net impact on the Government budget turns positive.

It has been shown in Section 6.4 that financial support for the power sector during a transitional phase is necessary to improve the financial position of the utilities, which otherwise will suffer if tariffs are not increased adequately. The table above shows that - even in the Business as Usual tariff scenario - the financial support requirement never exceeds the debt service payment for the foreign and local loans from the sector entities to the Government. Therefore it might be possible to restructure the loan repayment schedules during the transition period in such way, that they help to improve the cash flow situation of the companies e.g. by providing respective grace periods for the Government loans to overcome the cash flow shortfall in the power sector. This basically means that the Government could use its revenues from debt service payment to provide the required financial support.

7. Time-bound Action Plan for Financial Restructuring and Recovery of the Power Sector

Financial restructuring is the pre-requisite for the financial recovery and therefore has to be the first step in a time-bound action plan. We are of the opinion that the financial restructuring can be achieved in a relatively short period of time, whilst the financial recovery requires a medium to long term time scale which needs to go hand in hand with the power sector restructuring process.

For this reason we have split the time-bound action plan into a short term and a long term action plan.

7.1 Short Term Action Plan

The major work related to the short term action plan is to resolve the basic issues related to the preparation of the restructured balance sheets of the involved power sector entities. The financial restructuring exercise requires a clear data basis to be performed successfully. To achieve this the Government may appoint a consultant / accountant to undertake the work as outlined below:

(a) Accounts receivable of end-use customers:

As a basis for the write-off / set-off or addition to bad debt it will be necessary to

- Commercial operation statistics and financial accounting report significantly different figures on the accounts receivable form end-use customers. These figures need to be reconciled.
- Receivables that cannot be recovered need to be identified for write-off.
- Receivables deemed to be recoverable to be kept in balance sheet / commercial operation statistics on the reconciled basis
- Provisions for bad debt to cover all receivables form private customers in excess to three months billing to be as provisions for doubtful debt.
- Government and Semi-Government debt in excess of three months billing to be set-off against debt service liabilities.

(b) Inter-Company Accounts for bulk energy supply and wheeling services

- Inter-Company Accounts for bulk energy supply and wheeling services
  - The balances for such inter-company accounts have to be reconciled for all power sector entities (with the exception of the accounts between BGDB - DESCO and PGCB and DESCO which obviously reconcile their balances at the end of the financial year).
  - Correct the balances between the companies in the balance sheets
  - Reduce the payables/receivables to three months of billing through write-offs or adjustments with DSL.
- Other inter-company accounts related to accounts receivable passed on to successor companies in the context of transfers of assets need to be identified and written-off in the balanced sheets. This is mainly in relation to DESA and DESCO or REB respectively and BPDB and WZPDC.
- Other inter-company accounts related to previous asset transfer between BPDB may be identified and written-off.

- Procedures need to be established to avoid future discrepancies in accounts receivable.

(c) Clarification and finalization of unresolved issues from previous asset transfers

- The Government needs to transfer the subsidiary loan agreements related to the previous asset transfers to the companies taken over the old assets on the basis of the financial year 2005. This requires corrections and adjustments in the loan balances of the concerned companies (BPDB, PGCB, DESA and DESCO).
- The GoB loans related to the asset transfer may be formalized under one loan agreement.
- A consultant may be engaged to clarify the transfer value of the assets for the Gulshan supply area from DESA to DESCO.

It shall be noted that there are no common policies and schemes with respect to future asset transfers e.g.

- the DESA - PGCB transfer of the 132 kV transmission around Dhaka;
- the transfer of Tongi supply area to DESCO; and
- the spin-off of the distribution and generation companies from BPDB.

Such policies or schemes may be established on the level of the GoB across the sector to avoid future confusion and insecurity. This policy may cover the transfer of the assets at book values, the transfer of accounts receivable in case of distribution companies, the transfer and formalization of loans (foreign and Government) as well as the split of other balance sheet items.

(d) Foreign and Government Loans

- GoB needs to establish (reconcile) the loan balances for foreign and local loans with all power sector entities directly;
- loan balances for outstanding foreign loans from donor agencies may be transferred to one subsidiary loan agreement with slightly relaxed lending terms and a prolonged repayment period;
- this will relax cash flow constraints of the power sector entities in future and will enable them to pay interest and principal of the loan balances in time
- a similar arrangement (one loan agreement with relaxed lending terms) needs to be established for the loans provided by GoB for investment financing.

(e) Unrecorded pensions and gratuities

- The unrecorded pension and gratuity liabilities of BPDB and DESA need to be identified and determined; and
- GoB may initiate actuarial / audit work on this subject

(f) Other Balance Sheet Items

GoB may engage a consultant to deal with a number of other accounting issues that could be resolved in the context of the financial restructuring of the balance sheets:

- overstatement of asset values in DESA's books;
- write-off of transmission assets in BPDB's books;
- transfer of work in progress on transmission in BPDB's books and transfer of the related suppliers credit to PGCB; and
- clarification of intra-company clearing accounts and write off balances which cannot be clarified

(g) Unpaid Debt Service Liabilities

- The unpaid debt service liabilities across the sector sum up to more than TK 74.1 billion and hence are in a similar range than the foreign loans across the sector; the majority of them (TK 68.5 billion) is from BPDB and DESA;
- the DSL may be reconciled in the first place with the GoB and then be transferred to local loans and to equity as to achieve a debt to equity ratio of 60% to 40%; therefore
- GoB may agree in general to this principle so that it can be applied for future spin-offs of generation and distribution companies from BPDB.

We have drawn up a time frame that we belief is realistic to initiate and conduct the above mentioned activities. It shows that the financial restructuring exercise can be finalized during the second quarter of the 2007 so that the results can be realized in the balance sheets for the FY 2006/07.

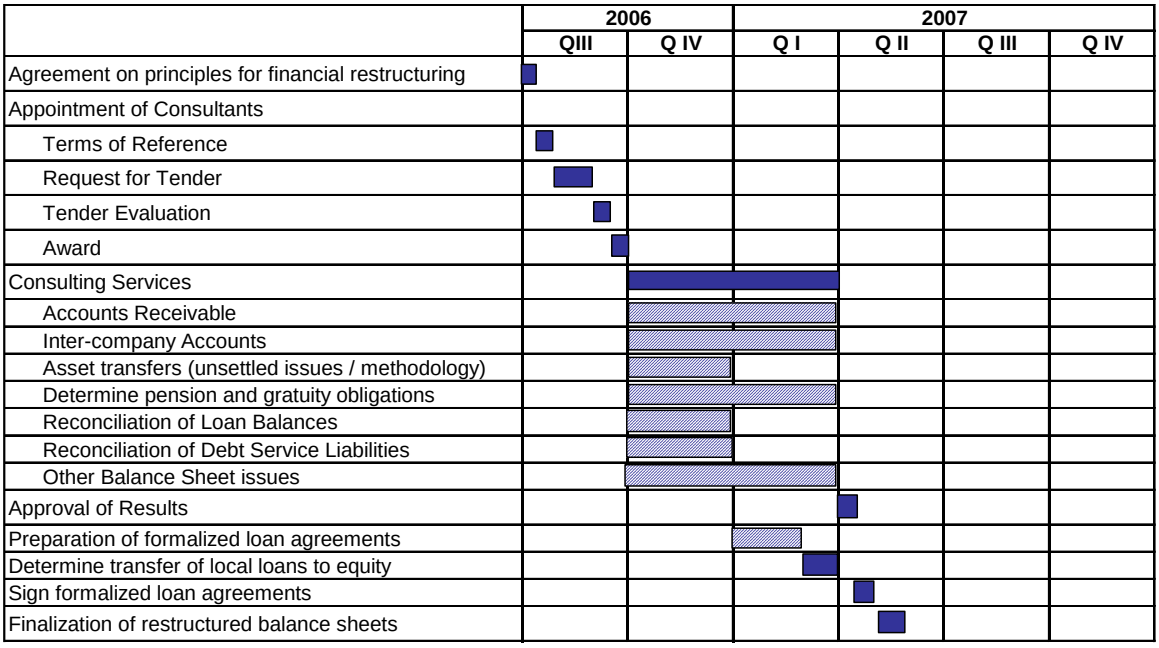

Figure 7-1: Short Term Action Plan for the financial restructuring

The financial restructuring represents only the starting point of the financial recovery process of the power sector. To avoid that the financial breathing space that the utilities receive through the financial restructuring is just used up without the achievement of performance and efficiency improvements we suggest, that the utilities enter into an agreement with the Government stipulating the performance targets and obligations of the companies on one side and the obligations and support of the Government on the other side. Of course the performance target need to comprise long term objectives with a clear timeframe,

when they have to be achieved and the definition of interim targets on an annual basis.

The targets need to be differentiated between the various companies according to their present financial and operational status. It is obvious that PGCB and DESCO already operating at commercial levels have already achieved a good level of operational efficiency and therefore will require different treatment then BPDB and DESA.

This could comprise as major obligations performance parameters for the companies related to

- improvement in billing / collection performance:
  - billing / collection ratio of close to 100%;
  - collection / import ratio of above 87%;
  - outstanding customer debt (accounts receivable to stay below three months with the objective to reduce the equivalent debtor days to 60 days within four to five years and to 45 days on the long run;
- reduction of technical losses of the distribution companies:
  - to 12% with respect to BPDB and DESA within a period of 10 years with interim steps to be achieved on annual basis;
  - to 10% for DESCO within a period of 10 years;
- technical losses of PGCB not to exceed the existing 3.5% and the long term target to reduce transmission losses to 3%;
- financial performance targets
  - DSCR of 1.3;
  - Self financing ratio of 30% within a period of up to five years (for BPDB and DESA);
  - target return on net fixed assets of 10% and on equity of 15% (for BPDB and DESA) within a period of 10 years;
- timely and complete payment of financial obligations to the Government (debt service payment);
- punctual payment for electricity purchase to the Single Buyer (within a period of 45 days upon receipt of the invoice; and
- improvement of customer service parameter.

- Government obligations
  - agree on the principles for financial restructuring;
  - increase of tariffs (or financial support for insufficient tariff increases);
  - rationalization of bulk supply tariffs and end customer tariffs; and
  - punctual payment of electricity bills of Government and Semi Government customers.

Additionally the following may be initiated during the initial period of the financial restructuring activities[16]:

- Review of the operational and managerial experience of DESCO including documentation of the management information system, review of

[16]) as proposed by World Bank

performance, role of autonomy to management, measures and technology for theft detection.

- Assessment of existing HR practices and commercial processes in BPDB to assist in making a Governance Improvement Action plan.
- Initiate a dialogue with consumer groups to understand their perception of quality of supply and customer service and perform a corresponding customer survey with high value industrial and commercial customers.

We would like to add that advantage may also be taken by reviewing the first 15 months of experience of WZPDC to develop lessons learnt and to develop strategies which can be used for the spin off of further distribution companies from BPDB which are about to start soon.

We have indicated that the financial recovery will not be able without a significant increase of the end-use customer tariffs – which of course depends from the agreement of the BERC. However, presently BERC is not yet fully operational and has not participated in the discussions on the financial restructuring and recovery plan. Nevertheless we expect that BERC will have to review the proposed financial restructuring activities and certainly the proposed increases of tariffs and there is the risk, that BERC will object the proposals. Typically regulators take a stricter approach on efficiency targets, e.g. BERC may consider that tariffs may be based on lower distribution losses, say 15%. This may certainly cause significant impact on the restructuring and recovery plan and cause significant deviations on the short and medium term.

7.2 Overall Long Term Action Plan

The overall long term action plan provides indicative milestones for the financial restructuring and recovery as summarized below. For purposes of completeness it shows as well the key milestones from the short term action plan.

The long term action plan is designed to tie into the objectives and timeframe of the three years roadmap.

No.	Outcome	Actions	Date	Responsibility
1	Agreement of the Government of Bangladesh on the principles applied for financial restructuring	• The cornerstones of the financial restructuring need to be determined by the Government and the relevant approvals from related Ministries and if necessary the Parliament	Third quarter 2006	Ministry of Finance / Ministry of Power, Energy and Mineral Resources

No.	Outcome	Actions	Date	Responsibility
2	Appointment of Consultants and auditors to prepare and conduct financial restructuring	• Consultants to • reconcile outstanding GOB loan balances, • reconcile foreign loan balances and related debt service liabilities with GOB • undertake audit of unrecoverable amount of accounts receivable • reconcile the differences between the billing records in the Operational Statistics of the companies and the accounting records • audit and reconcile the inter-company accounts of all sector utilities • prepare the resolution of unresolved issues related to previous asset transfers • resolve other outstanding balance sheet items • clarify and determine unfunded pension obligations and gratuities	Third quarter 2006	MOF, MEPMR, Power Cell
3	Finalize financial restructuring work	• The financial restructuring must be included in the financial statements for the financial year 2005/06	second quarter / 2007	Consultants, auditors, MOF, BPDB, PGCB, DESA, DESCO, APSCL, WZPDC
4	Achieve agreement with GOB on the conversion of loan amounts to equity	• Determine the amount of debt to be converted to equity as to achieve a debt : equity proportion of 60% to 40%	second quarter 2006	MOF,all utilities, MPEMR, Power Cell and Parliament if required
5	Formalization of loan agreements for GOB loans	• combination of all outstanding GOB loans with DESCO and PGCB into one loan agreement for each company with uniform lending terms	end FY 2006/07	Consultants, auditors, MOF, BPDB, PGCB, DESA, DESCO, APSCL, WZPDC
		• Formalize future GOB loans under corresponding lending agreements directly with the borrowing utility using uniform lending terms		
6	Presentation of fixed assets in DESA's balance sheet	• Prepare an asset register which includes the identification and verification of existing assets	2006/07	DESA
7	Revaluation of fixed assets across the sector	• Agree on a uniform methodology for asset revaluation	2006	GOB

No.	Outcome	Actions	Date	Responsibility
		• Revalue assets of all sector entities according to the methodology • Incorporate the new asset values in the balance sheets	2006/07	BPDB, PGCB, DESA, DESCO, WZPDC, APSC
8	Tariff rationalization and adjustment	• Conduct a tariff study with the objective to design and formulate a suitable tariff strategy for the sector	2006/07	BERC
		• Implement the recommendations of the tariff study	2006/07	BERC, all utilities
9	Tariff Methodology	• Complete tariff methodology	2006	BERC
10	Performance improvement	• Implement Performance Target Achievement scheme according to 3-Year Road Map (collections, CG ratio, arrears)	continuous	Power Cell, utilities

11	Loss reduction	• Implement measures according to 3-Year Road Map:
		  • Installation of system metering for establishing commercial arrangements among the sector entities
		  • PTA (system loss)
			continuous	Power Cell, utilities

12	Improvement of corporate governance and corporate culture	• Development of a comprehensive MIS scheme according to 3-Year Road Map	December 2007	Power Cell
		• Management efficiency improvement	continuous	all utilities
		• Establish PTAs for all utilities	continuous	all utilities
		• Conversion of BPDB into a Holding	November 2006	BPDB
		• Corporatize DESA	December 2007	DESA
		• Corporatize South Zone PDC	September 2007	SZPDC
		• Corporatize Central Zone PDC	December 2007	CZPDC
		• Corporatize North West Zone PDC	December 2007	NZPDC
		• Corporatization of Power Plants	2008	BPDB
13	Establishment of market governance	• Establish Single Buyer within BPDB	2006/07	Power Cell, BPDB
		• Prepare a comprehensive set of rules (Market Rules) for the functioning of the Single Buyer Market	2007	BERC
		• Enhance the function of the Single Buyer to the function of a Market Operator governing and supervising the commercial behavior of the market participants	2007/08	Power Cell / MPEMR

No.	Outcome	Actions	Date	Responsibility
		• Establish the Market Operator as company which is independent from the market participants (not part of BPDB holding)	2008	Power Cell / MPEMR
14	Establishment of commercial interfaces	• Establish commercial interfaces in form of agreements between the sector entities already now, before unbundling and corporatization of the sector entities and establish transfer prices	2006/07	
		• Improve commercial management of sector entities prior to corporatization	continuous	all utilities
		• Establish standard agreements for SPPs and CPPs with standardized tariffs (based on marginal cost) for low transaction cost and quick implementation	2006/07	BERC/ Power Cell / MPEMR
		• Establish an open access regime for SPPs and CPPs	2007	BERC / Power Cell / PGCB
		• Establish wheeling charges for the use of distribution systems for eligible customers and PBSs	2006/07	BERC / Power Cell / BPDB

APPENDICES

Appendix A: Operational Performance of BPDB's Distribution Zones

Appendix B: Balance Sheets of Successor Companies

- BPDB Power Generation Company
- Ghorasal Power Station Company (GPSCL)
- Electricity Generation Company of Bangladesh (EGCB)
- CZPDCL
- NZPDCL
- SZPDCL

Appendix C: Development of Power Capacity and Dispatch

Appendix D: Cost of Supply

Appendix E: Investment Program for the Power Sector

Appendix F: Summary of Tariffs (Tariff Scenario – Cost Coverage in 2010)

Appendix G: Result of Financial Projections (Income Statement, Balance Sheet, Cash Flow, Performance Indicators)

- Sector (consolidated)
- BPDB Generation Company
- APSCL
- GPSCL
- EGCB
- PGCB
- Single Buyer
- DESA
- DESCO
- WZPDCL
- CZPDCL
- NZPDCL
- SZPDCL

Appendix H: Key Financial Indicators for the Sector and each Entity for Tariff Scenario:

- Full Cost Coverage
- Business as Usual
- Cost Coverage in 2010

Appendix I: Impact on Government Accounts (Tariff Scenario – Cost Coverage in 2010)

Appendix A: Operational Performance of BPDB's Distribution Zones

BPDB - North West Zone			
		2003/04	2004/05
Imported Electricity	GWh	2,407.4	2,569.2
			1,226.3
Electricity sold to Consumers	GWh	981.1	986.0
Electricity sold to PBSs	GWh	1,169.8	1,342.9
Total Electricity Sold	GWh	2,150.9	2,328.9
Distribution Loss (excl. PBSs)		20.72%	19.59%
Distribution Losses (incl. PBSs)		10.65%	9.35%
Billed Consumption / End Users	MTK	3,284.4	3,346.2
Average Sales Rate / End Users	TK/kWh	3.348	3.394
Total Amount Collected / End Users	MTK	3,314.6	3,274.8
Collection to Billing Ratio / End Users		100.92%	97.87%
Collection to Import Ratio / End Users		80.01%	78.69%
Cost of Electricity Procurement / End Users	MTK	2,402.0	2,380.1
Wheeling Charge / End Users	MTK	283.5	280.9
Total Cost of Electricity / End Users	MTK	2,685.6	2,661.1
Distribution Margin per kWh sold to end users	TK/kWh	0.61	0.69
Distribution margin per kWh collected from eu	TK/kWh	0.64	0.62
Total Number of End Users (average)		429,307	454,952
Average electricity consumption per end user	kWh/eu	2,285.4	2,167.3
Average bill per end user	TK/eu	7,650.58	7,355.06

BPDB - Central Zone			
		2003/04	2004/05
Imported Electricity	GWh	3,662.4	4,226.0
			963.0
Electricity sold to Consumers	GWh	734.6	758.7
Electricity sold to PBSs	GWh	2,707.9	3,263.0
Total Electricity Sold	GWh	3,442.4	4,021.8
Distribution Loss (excl. PBSs)		23.05%	21.21%
Distribution Losses (incl. PBSs)	GWh	6.01%	4.83%
Billed Consumption / End Users	MTK	2,464.1	2,555.9
Average Sales Rate / End Users	TK/kWh	3.355	3.369
Total Amount Collected / End Users	MTK	2,391.7	2,542.5
Collection to Billing Ratio / End Users		97.06%	99.47%
Collection to Import Ratio / End Users		74.69%	78.38%
Cost of Electricity Procurement / End Users	MTK	1,852.7	1,869.1
Wheeling Charge / End Users	MTK	218.7	220.6
Total Cost of Electricity	MTK	2,071.4	2,089.7
Distribution Margin per kWh sold to end users	TK/kWh	0.53	0.61
Distribution margin per kWh collected from eu	TK/kWh	0.44	0.60
Total Number of End Users (average)		325,910	350,568
Average electricity consumption per end user	kWh/eu	2,253.9	2,164.3
Average bill per end user	TK/eu	7,560.72	7,290.79

BPDB - South Zone			
		2003/04	2004/05
Imported Electricity	GWh	3,883.5	4,174.4
Electricity sold to Consumers	GWh	2,158.0	2,242.9
Electricity sold to PBSs	GWh	1,175.4	1,373.5
Total Electricity Sold	GWh	3,333.4	3,616.4
Distribution Loss (excl. PBSs)		20.31%	19.92%
Distribution Losses (incl. PBSs)	GWh	14.16%	13.37%
Billed Consumption / End Users	MTK	7,496.9	7,805.8
Average Sales Rate / End Users	TK/kWh	3.474	3.480
Total Amount Collected / End Users	MTK	7,496.9	7,680.2
Collection to Billing Ratio / End Users		100.00%	98.39%
Collection to Import Ratio / End Users		79.69%	78.79%
Cost of Electricity Procurement / End Users	MTK	5,256.1	5,436.3
Wheeling Charge / End Users	MTK	620.4	641.7
Total Cost of Electricity	MTK	5,876.5	6,078.0
Distribution Margin per kWh sold to end users	TK/kWh	0.75	0.77
Distribution margin per kWh collected from eu	TK/kWh	0.75	0.71
Total Number of End Users (average)		569,912	607,160
Average electricity consumption per end user	kWh/eu	3,786.5	3,694.0
Average bill per end user	TK/eu	13,154.52	12,856.29

BPDB - West Zone				
		2003/04	2004/05 x)	WZPDC xx)
Imported Electricity	GWh	2,294.8	1,754.4	397.6
Electricity sold to Consumers	GWh	1,036.0	799.2	312.2
Electricity sold to PBSs	GWh	952.0	759.8	11.3
Total Electricity Sold	GWh	1,988.0	1,559.0	323.5
Distribution Loss (excl. PBSs)		22.85%	19.64%	19.17%
Distribution Losses (incl. PBSs)	GWh	13.37%	11.14%	18.63%
Billed Consumption / End Users	MTK	3,579.6	2,792.7	1,098.3
Average Sales Rate / End Users	TK/kWh	3.455	3.494	3.518
Total Amount Collected / End Users	MTK	3,772.9	2,503.9	1,226.6
Collection to Billing Ratio / End Users		105.40%	89.66%	111.69%
Collection to Import Ratio / End Users		81.32%	72.05%	90.27%
Cost of Electricity Procurement / End Users	MTK	2,606.2	1,930.4	749.7
Wheeling Charge / End Users	MTK	307.6	227.9	88.5
Total Cost of Electricity	MTK	2,913.9	2,158.3	838.2
Distribution Margin per kWh sold to end users	TK/kWh	0.64	0.79	0.83
Distribution margin per kWh collected from eu	TK/kWh	0.83	0.43	1.24
Total Number of End Users (average)		415,978	439,489	442,227
Average electricity consumption per end user	kWh/eu	2,490.5	2,424.7	2,823.9
Average electricity bill per end user	TK/eu	8,605.27	8,472.56	9,933.94

x) The data include only the months up to the date of transfer to WZPDC 01. April 2005
xx) West Zone Power Distribution Company - covering April to June 2005

Appendix B: Balance Sheets of Successor Companies

- BPDB Power Generation Company
- Ghorasal Power Station Company (GPSCL)
- Electricity Generation Company of Bangladesh (EGCB)
- CZPDCL
- NZPDCL
- SZPDCL

BPDB Power Generation Company - Balance Sheet 30.06.2005 split up from BPDB				
desription	million Tk	Dt	Cr	restructured million Tk
Balance sheet				
Assets				
Fixed Assets gross value	52,884,735			52,884,735
Depreciation	-27,616,055			-27,616,055
Fixed Assets net value	25,268,680			25,268,680
Project in Progress	16,326,540			16,326,540
Total fixed assets	**41,595,220**			**41,595,220**
Investments	**0**			0
Stocks and stores	2,704,425			2,704,425
Cash and banks	5,244,081			5,244,081
Accounts receivables Single Buyer	1,383,421			1,383,421
Other s.t. assets	619,351			619,351
Provision for bad debts	0			0
Total current assets	**9,951,279**			**9,951,279**
Total assets	**51,546,499**			**51,546,499**
Liabilities				
Capital & Reserve				
Paid in capital	19,469,999	2,716,649	0	16,753,350
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**19,469,999**			**16,753,350**
Provisions				
Grants	0	0		0
Customer deposits (security)	0			0
Liquidity Damage Reserve	0			0
Deposit Work Fund	0			0
GPF & CPF & pension fund	0			0
Total provisions	**0**			**0**
Long term liabilities				
Government loans	8,529,651	749,753	2,716,649	10,496,547
Foreign loans	15,765,568	1,131,583		14,633,985
Suppliers Credit	0			0
Total long term liabilities	**24,295,219**			**25,130,532**
Short term liabilities				
Accounts payable fuel	6,940,117			6,940,117
Accounts payable other services	611,353			611,353
Current portion of lt liabilities (foreign)	0		1,131,583	1,131,583
Current portion of lt liabilities (local)	0		749,753	749,753
Debt servicing liabilities (principal)	0			0
Debt servicing liabilities (interest)	0			0
Clearing accounts	0			0
Other s.t. liabilities	229,810			229,810
Total short term liabilities	**7,781,281**			**9,662,617**
Total liabilities	**51,546,499**	**4,597,985**	**4,597,985**	**51,546,499**
Debt/equity ratio	**56**			**60**
Current ratio	**1.28**			**1.03**

Ghorashal Power Station Company - Balance Sheet 30.06.2005 split up from BPDB				
desription	million Tk	Dt	Cr	restructured million Tk
Balance sheet				
Assets				
Fixed Assets gross value	32,371,455			32,371,455
Depreciation	-17,761,694			-17,761,694
Fixed Assets net value	14,609,761			14,609,761
Project in Progress	251,000			251,000
Total fixed assets	**14,860,761**			**14,860,761**
Investments	**0**			0
Stocks and stores	1,655,415			1,655,415
Cash and banks	2,842,308			2,842,308
Accounts receivables Single Buyer	749,819			749,819
Other s.t. assets	51,289			51,289
Provision for bad debts	0			0
Total current assets	**5,298,830**			**5,298,830**
Total assets	**20,159,591**			**20,159,591**
Liabilities				
Capital & Reserve				
Paid in capital	15,674,262	9,175,780	0	6,498,482
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**15,674,262**			**6,498,482**
Provisions				
Grants	0	0		0
Customer deposits (security)	0			0
Liquidity Damage Reserve	0			0
Deposit Work Fund	0			0
GPF & CPF & pension fund	0			0
Total provisions	**0**			**0**
Long term liabilities				
Government loans	1,227,000	693,519	9,175,780	9,709,262
Foreign loans	38,440			38,440
Suppliers Credit	205,119	210,122	5,003	0
Total long term liabilities	**1,470,559**			**9,747,702**
Short term liabilities				
Accounts payable fuel	2,082,104			2,082,104
Accounts payable other services	929,134			929,134
Suppliers Credit	0		205,119	205,119
Current portion of lt liabilities (local)	0		693,519	693,519
Debt servicing liabilities (principal)	0			0
Debt servicing liabilities (interest)	0			0
Clearing accounts	0			0
Other s.t. liabilities	3,533			3,533
Total short term liabilities	**3,014,771**			**3,913,408**
Total liabilities	**20,159,591**	**10,079,421**	**10,079,421**	**20,159,591**
Debt/equity ratio	**9**			**60.000**
Current ratio	**1.76**			**1.35**

Electricity Generation Company Bangladesh - Balance Sheet 30.06.2005 split up from BPDB				
desription	million Tk	Dt	Cr	restructured million Tk
Balance sheet				
Assets				
Fixed Assets gross value	5,111,282			5,111,282
Depreciation	-3,354,705			-3,354,705
Fixed Assets net value	1,756,577			1,756,577
Project in Progress	12,773,000			12,773,000
Total fixed assets	**14,529,577**			**14,529,577**
Investments	**0**			0
Stocks and stores	261,381			261,381
Cash and banks	1,087,694			1,087,694
Accounts receivables Single Buyer	286,940			286,940
Other s.t. assets	427,490			427,490
Provision for bad debts	0			0
Total current assets	**2,063,505**			**2,063,505**
Total assets	**16,593,082**			**16,593,082**
Liabilities				
Capital & Reserve				
Paid in capital	8,601,316	2,939,373	0	5,661,944
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**8,601,316**			**5,661,944**
Provisions				
Grants	0	0		0
Customer deposits (security)	0			0
Liquidity Damage Reserve	0			0
Deposit Work Fund	0			0
GPF & CPF & pension fund	0			0
Total provisions	**0**			**0**
Long term liabilities				
Government loans	3,964,000	460,225	2,939,373	6,443,148
Foreign loans	2,672,643	622,578		2,050,065
Suppliers Credit	0			0
Total long term liabilities	**6,636,643**			**8,493,213**
Short term liabilities				
Accounts payable fuel	892,059			892,059
Accounts payable other services	283,272			283,272
Current portion of lt liabilities (foreign)	0		622,578	622,578
Current portion of lt liabilities (local)	0		460,225	460,225
Debt servicing liabilities (principal)	0			0
Debt servicing liabilities (interest)	0			0
Clearing accounts	0			0
Other s.t. liabilities	179,791			179,791
Total short term liabilities	**1,355,123**			**2,437,926**
Total liabilities	**16,593,082**	**4,022,175**	**4,022,175**	**16,593,082**
Debt/equity ratio	**44**			**60**
Current ratio	**1.52**			**0.85**

Central Zone Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	17,146,819			17,146,819
Depreciation	-10,413,860			-10,413,860
Fixed Assets net value	6,732,959			6,732,959
Project in Progress	1,977,220			1,977,220
Total fixed assets	**8,710,179**			**8,710,179**
Investments	**0**			**0**
Stocks and stores	876,856			876,856
Cash and banks	1,171,418			1,171,418
Accounts receivable end-use custromers	1,937,511			1,937,511
Other s.t. assets	110,602			110,602
Provision for bad debts	-1,362,429			-1,362,429
Total current assets	**2,733,957**			**2,733,957**
Total assets	**11,444,136**			**11,444,136**
Liabilities				
Paid in capital	8,799,425	4,459,405	0	4,340,019
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**8,799,425**			**4,340,019**
Grants/reimbursable project aid	0	0		0
Customer deposits (security)	293,609			293,609
Liquidity Damage Reserve	0			0
Deposit Work Fund	146,092			146,092
GPF & CPF & pension fund	0			0
Total provisions	**439,701**			**439,701**
Long term liabilities				
Government loans	1,077,304	369,114	4,459,405	5,167,595
Foreign loans	966,411	59,899		906,512
Total long term liabilities	**2,043,715**			**6,074,108**
Accounts payable SB	0			0
Accounts payable other services	98,690			98,690
Current portion of lt liabilities (local)	0		369,114	369,114
Current Portion of lt liabilities (foreign)	0		59,899	59,899
Clearing accounts	0			0
Other s.t. liabilities	62,605			62,605
Total short term liabilities	**161,295**			**590,308**
Total liabilities	**11,444,136**	**4,888,418**	**4,888,418**	**11,444,136**
Debt/equity ratio	**22**			**60**

North Zone Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	18,621,448			18,621,448
Depreciation	-11,850,014			-11,850,014
Fixed Assets net value	6,771,434			6,771,434
Project in Progress	3,608,870			3,608,870
Total fixed assets	**10,380,304**			**10,380,304**
Investments	**0**			**0**
Stocks and stores	952,266			952,266
Cash and banks	1,533,616			1,533,616
Accounts receivable end-use custromers	2,536,583			2,536,583
Other s.t. assets	183,291			183,291
Provision for bad debts	-1,783,688			-1,783,688
Total current assets	**3,422,068**			**3,422,068**
Total assets	**13,802,372**			**13,802,372**
Liabilities				
Paid in capital	9,232,864	3,975,354	0	5,257,510
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**9,232,864**			**5,257,510**
Grants/reimbursable project aid	0	0		0
Customer deposits (security)	384,392			384,392
Liquidity Damage Reserve	0			0
Deposit Work Fund	191,264			191,264
GPF & CPF & pension fund	0			0
Total provisions	**575,655**			**575,655**
Long term liabilities				
Government loans	1,902,589	391,863	3,975,354	5,486,080
Foreign loans	1,928,731	101,564		1,827,167
Total long term liabilities	**3,831,320**			**7,313,247**
Accounts payable SB	0			0
Accounts payable other services	95,596			95,596
Current portion of lt liabilities (local)	0		391,863	391,863
Current Portion of lt liabilities (foreign)	0		101,564	101,564
Clearing accounts	0			0
Other s.t. liabilities	66,937			66,937
Total short term liabilities	**162,533**			**655,960**
Total liabilities	**13,802,372**	**4,468,781**	**4,468,781**	**13,802,372**
Debt/equity ratio	**32**			**60**

South Zone Balance Sheet 30.06.2005				
desription	original million Tk	Dt	Cr	restructured million Tk
Assets				
Fixed Assets gross value	24,432,196			24,432,196
Depreciation	-15,481,318			-15,481,318
Fixed Assets net value	8,950,878			8,950,878
Project in Progress	6,225,200			6,225,200
Total fixed assets	**15,176,078**			**15,176,078**
Investments	**0**			**0**
Stocks and stores	1,249,416			1,249,416
Cash and banks	3,577,532			3,577,532
Accounts receivable end-use custromers	5,917,194			5,917,194
Other s.t. assets	334,556			334,556
Provision for bad debts	-4,160,884			-4,160,884
Total current assets	**6,917,815**			**6,917,815**
Total assets	**22,093,893**			**22,093,893**
Liabilities				
Paid in capital	13,239,504	4,705,310	0	8,534,194
Revaluation reserve	0			0
Retained earnings, etc.	0			0
Total capital & reserves	**13,239,504**			**8,534,194**
Grants/reimbursable project aid	0	0		0
Customer deposits (security)	896,687			896,687
Liquidity Damage Reserve	0			0
Deposit Work Fund	446,169			446,169
GPF & CPF & pension fund	0			0
Total provisions	**1,342,855**			**1,342,855**
Long term liabilities				
Government loans	3,650,417	557,048	4,705,310	7,798,678
Foreign loans	3,611,604	162,710		3,448,894
Total long term liabilities	**7,262,021**			**11,247,572**
Accounts payable SB	0			0
Accounts payable other services	137,035			137,035
Current portion of lt liabilities (local)	0		557,048	557,048
Current Portion of lt liabilities (foreign)	0		162,710	162,710
Clearing accounts	0			0
Other s.t. liabilities	112,477			112,477
Total short term liabilities	**249,512**			**969,271**
Total liabilities	**22,093,893**	**5,425,068**	**5,425,068**	**22,093,893**
Debt/equity ratio	**39**			**60**

Appendix C: Development of Power Capacity and Dispatch

Development of Power Capacity

Capacity (MW)		FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Power Plant	**Owner**	**Fuel**											
Karnafuli hydro power plant	BPDB	Hydro	230	230	230	230	230	230	330	330	330	330	330
Ashugonj 2x64 MW ST	APSCL	Gas	120	120	120	0	0	0	0	0	0	0	0
Ashugonj 3x150 MW ST	APSCL	Gas	423	423	423	423	423	423	423	423	423	423	423
Ashugonj 90 MW CC	APSCL	Gas	60	60	60	60	60	0	0	0	0	0	0
Ashugonj CT 56 MW	APSCL	Gas	40	40	40	40	40	0	0	0	0	0	0
Shahjibazar CT	BPDB	Gas	30	30	0	0	0	0	0	0	0	0	0
Shahjibazar2x35 MW CT	BPDB	Gas	68	68	68	68	68	68	68	68	68	68	68
Ghorasal 2x55 ST	GPSCL	Gas	74	74	74	74	74	37	37	0	0	0	0
Ghorasal 4x210 ST	GPSCL	Gas	788	788	788	788	788	788	788	788	788	788	788
Haripur 3x33 CT	EGCB	Gas	90	90	90	90	90	0	0	0	0	0	0
Raozan 2X210 ST	BPDB	Gas	328	328	328	328	328	328	328	328	328	328	328
Sylhet 20 MW CT	BPDB	Gas	19	19	19	0	0	0	0	0	0	0	0
Fenchuganj 90 CC	BPDB	Gas	88	88	88	176	176	176	176	176	176	176	176
Siddhirgonj 50 MW ST	EGCB	Gas	28	28	0	0	0	0	0	0	0	0	0
Siddhirgonj 210 MW ST	EGCB	Gas	197	197	197	197	197	197	394	394	394	394	394
Sikalbaha 60 MW ST	BPDB	Gas	47	47	47	47	47	47	47	47	47	47	47
Baghabari 71 MW CT	BPDB	Gas	70	70	70	70	70	70	70	70	0	0	0
Baghabari 100 MW CT	BPDB	Gas	100	100	100	100	100	100	100	100	100	100	100
Khulna 60 MW ST	BPDB	FOIL	47	47	47	47	0	0	0	0	0	0	0
Khulna 110 MW ST	BPDB	FOIL	89	89	89	89	89	89	89	89	89	89	89
Khulna 2x28 MW CT	BPDB	HSD	32	32	32	0	0	0	0	0	0	0	0
Bheramara 3x20 MW CT	BPDB	HSD	54	54	54	0	0	0	0	0	0	0	0
Barisal,Rangpur,Saidpur 4x20MW CT	BPDB	HSD	72	72	72	36	0	0	0	0	0	0	0
KPCL, Khulna BMPP 110 MW CT	IPP	FOIL	110	110	110	110	110	110	110	110	110	110	0
West Mont Baghabari BMPP 90 MW CT	IPP	Gas	90	0	0	0	0	0	0	0	0	0	0
NEPC, Haripur BMPP 110 MW D	IPP	Gas	110	110	110	110	110	110	110	110	110	110	0
RPCL, Mymenshing 140 MW GT	IPP	Gas	140	140	0	0	0	0	0	0	0	0	0
CDC, Haripur 360 MW CC	IPP	Gas	360	360	360	360	360	360	360	360	360	360	360
CDC, Meghnaghat 450 MW CC	IPP	Gas	450	450	450	450	450	450	450	450	450	450	450
CDC, Meghnaghat 450 MW CC #2	IPP	Gas	0	0	0	450	450	450	450	450	450	450	450
Tongi 80 MW GT	BPDB	Gas	0	62	104	104	104	104	104	104	104	104	104
Siddhirgonj 120 MW CT + 2*120 MW	EGCB	Gas	0	0	0	0	0	357	357	357	357	357	357
Chandpur 150 MW100 MW CC	BPDB	Gas	0	0	0	0	0	99	99	99	99	99	99
Sylhet 150 MW CC (100 MW)	BPDB	Gas	0	0	0	0	0	99	99	99	99	99	99
Barapukuria 2x125 MW ST	BPDB	Coal	0	0	230	230	230	230	230	230	230	230	230
RPCL, Mymenshing 210 MW CC	IPP	Gas	0	0	210	210	210	210	210	210	210	210	210
West Mont Baghabari 130 MW CC	IPP	Gas	0	130	260	260	260	260	260	260	260	260	130
Serajganj 450 MW CC	IPP	Gas	0	0	0	0	450	450	450	450	450	450	450
Khulna 210 MW ST	BPDB	Gas	0	0	0	0	0	0	197	197	197	197	197
450 MW Combined Cycle	IPP	Gas	0	0	0	0	450	1,350	1,800	2,700	3,150	4,050	4,950
150 MW Combustion Turbine	BPDB	Gas	0	0	0	300	300	300	450	450	600	600	750
Total			**4,354**	**4,456**	**4,870**	**5,447**	**6,264**	**7,492**	**8,586**	**9,449**	**9,979**	**10,879**	**11,579**
Subtotal Capacity	BPDB		1,274	1,336	1,578	1,825	1,742	1,940	2,387	2,387	2,467	2,467	2,617
(data input for entity sheets)	APSCL		643	643	643	523	523	423	423	423	423	423	423
	GPSCL		862	862	862	862	862	825	825	788	788	788	788
	EGCB		315	315	287	287	287	554	751	751	751	751	751
	IPP		1,260	1,300	1,500	1,950	2,850	3,750	4,200	5,100	5,550	6,450	7,000
Total			4,354	4,456	4,870	5,447	6,264	7,492	8,586	9,449	9,979	10,879	11,579
Capacity as per PSMP			4,458	4,683	5,425	6,002	7,313	7,986	8,586	9,449	9,979	10,879	11,579

Development of Net Generation

Net Generation (GWh)	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Power Plant	**Owner**											
Karnafuli hydro power plant	BPDB	865	843	857	843	843	843	862	861	859	857	855
Ashugonj 2x64 MW ST	APSCL	564	507	490	0	0	0	0	0	0	0	0
Ashugonj 3x150 MW ST	APSCL	2,132	2,224	2,077	1,933	1,797	1,614	1,551	1,509	1,530	1,504	1,510
Ashugonj 90 MW CC	APSCL	146	244	236	221	202	0	0	0	0	0	0
Ashugonj CT 56 MW	APSCL	146	41	25	16	2	0	0	0	0	0	0
Shahjibazar CT	BPDB	143	29	0	0	0	0	0	0	0	0	0
Shahjibazar2x35 MW CT	BPDB	173	517	512	488	438	386	368	358	379	371	380
Ghorasal 2x55 ST	GPSCL	144	388	385	369	346	153	144	0	0	0	0
Ghorasal 4x210 ST	GPSCL	3,052	3,603	3,526	3,367	3,170	2,851	2,743	2,675	2,714	2,665	2,674
Haripur 3x33 CT	EGCB	446	716	702	665	587	0	0	0	0	0	0
Raozan 2X210 ST	BPDB	1,873	1,450	1,443	1,387	1,311	1,172	1,131	1,096	1,117	1,095	1,100
Sylhet 20 MW CT	BPDB	58	144	140	0	0	0	0	0	0	0	0
Fenchuganj 90 CC	BPDB	370	536	504	887	813	726	695	676	684	669	667
Siddhirgonj 50 MW ST	EGCB	120	136	0	0	0	0	0	0	0	0	0
Siddhirgonj 210 MW ST	EGCB	657	1,080	981	904	981	981	1,443	1,406	1,421	1,396	1,399
Sikalbaha 60 MW ST	BPDB	211	192	183	171	150	133	125	124	125	122	125
Baghabari 71 MW CT	BPDB	435	570	568	546	499	438	424	403	0	0	0
Baghabari 100 MW CT	BPDB	693	816	822	795	746	659	635	606	615	603	618
Khulna 60 MW ST	BPDB	143	185	171	157	0	0	0	0	0	0	0
Khulna 110 MW ST	BPDB	533	351	326	301	243	225	221	207	222	219	227
Khulna 2x28 MW CT	BPDB	28	35	22	0	0	0	0	0	0	0	0
Bheramara 3x20 MW CT	BPDB	115	56	34	0	0	0	0	0	0	0	0
Barisal,Rangpur,Saidpur 4x20MW CT	BPDB	127	65	38	14	0	0	0	0	0	0	0
KPCL, Khulna BMPP 110 MW CT	IPP	564	506	487	458	413	365	351	335	340	332	0
West Mont Baghabari BMPP 90 MW CT	IPP	518.1	0	0	0	0	0	0	0	0	0	0
NEPC, Haripur BMPP 110 MW D	IPP	583	687	625	566	521	468	447	436	439	430	0
RPCL, Mymenshing 140 MW GT	IPP	608	608	0	0	0	0	0	0	0	0	0
CDC, Haripur 360 MW CC	IPP	2,382	2,634	2,565	2,461	2,079	1,647	1,557	1,487	1,497	1,454	1,430
CDC, Meghnaghat 450 MW CC	IPP	3,243	3,129	2,911	2,653	2,287	1,986	1,880	1,806	1,817	1,774	1,756
CDC, Meghnaghat 450 MW CC #2	IPP		0	0	2,653	2,287	1,986	1,880	1,806	1,817	1,774	1,756
Tongi 80 MW GT	BPDB	32	277	487	469	441	393	380	368	375	367	370
Siddhirgonj 120 MW CT + 2*120 MW	EGCB	0	0	0	0	0	1,283	1,225	1,180	1,192	1,159	1,156
Chandpur 150 MW100 MW CC	BPDB	0	0	0	0	0	346	331	316	320	312	313
Sylhet 150 MW CC (100 MW)	BPDB	0	0	0	0	0	341	327	310	315	307	309
Barapukuria 2x125 MW ST	BPDB	0	0	1,566	1,515	1,347	1,121	1,058	1,012	1,015	991	982
RPCL, Mymenshing 210 MW CC	IPP	0	0	1,270	1,117	985	872	834	810	819	802	793
West Mont Baghabari 130 MW CC	IPP	0	805	1,510	1,332	1,200	1,073	1,026	996	1,005	985	490
Serajganj 450 MW CC	IPP	0	0	0	0	2,151	1,900	1,814	1,757	1,772	1,733	1,718
Khulna 210 MW ST	BPDB	0	0	0	0	0	0	713	695	703	691	694
450 MW Combined Cycle	IPP	0	0	0	0	2,895	7,476	9,388	13,187	15,793	19,577	23,834
150 MW Combustion Turbine	BPDB	0	0	0	1,379	1,293	1,147	1,654	1,599	2,165	2,113	2,645
SPP	BPDB	99.4	0	0	0	0	0	0	0	0	0	0
Total		21,204	23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800
Subtotal net generation	BPDB	5,898	6,066	7,672	8,951	8,124	7,930	8,923	8,631	8,895	8,718	9,283
(data input for entity sheets)	APSCL	2,989	3,016	2,827	2,169	2,001	1,614	1,551	1,509	1,530	1,504	1,510
	GPSCL	3,197	3,991	3,911	3,736	3,517	3,004	2,887	2,675	2,714	2,665	2,674
	EGCB	1,223	1,932	1,683	1,569	1,568	2,264	2,668	2,586	2,613	2,555	2,555
	IPP	7,898	8,368	9,368	11,239	14,818	17,774	19,178	22,619	25,299	28,861	31,777
Total net generation		21,204	23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800

Appendix D: Cost of Supply

Generators	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BPDB Generation												
Taka million												
Return on net fixed assets		2,797	2,838	3,628	4,983	5,436	6,095	7,669	8,265	8,180	8,087	8,101
Depreciation		2,709	2,709	2,862	3,426	4,119	4,174	4,958	5,607	5,682	6,005	4,262
Fixed O&M (FOM) cost		0	1,690	2,719	2,955	2,972	3,302	4,132	4,318	4,504	4,707	4,996
Variable O&M (VOM) cost		0	760	1,269	1,546	1,456	1,469	1,712	1,722	1,860	1,900	2,130
Fuel cost		9,136	7,985	9,971	11,163	10,033	10,154	11,778	11,879	12,837	13,169	14,736
Capacity cost		5,507	7,238	9,210	11,363	12,527	13,571	16,758	18,189	18,366	18,798	17,359
Energy cost		9,136	8,745	11,240	12,709	11,488	11,623	13,490	13,601	14,696	15,070	16,866
Total generation cost		14,643	15,983	20,449	24,072	24,015	25,194	30,248	31,790	33,062	33,868	34,226
Capacity (MW)		1,274	1,336	1,578	1,825	1,742	1,940	2,387	2,387	2,467	2,467	2,617
Energy sent out (GWh)		5,898	6,066	7,672	8,951	8,124	7,930	8,923	8,631	8,895	8,718	9,283
Energy cost (Taka/kWh sent out)		1.5	1.4	1.5	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.8
Capacity cost (Taka/kW/month)		360	451	486	519	599	583	585	635	620	635	553
Generation cost (Taka/kWh sent out)		2.5	2.6	2.7	2.7	3.0	3.2	3.4	3.7	3.7	3.9	3.7
APSCL												
Return on net fixed assets		1,475	1,508	1,474	1,636	1,787	1,630	1,495	1,386	1,277	1,168	1,059
Depreciation		896	896	896	896	1,104	1,104	1,104	1,104	1,104	1,104	1,104
Fixed O&M (FOM) cost		0	967	1,032	871	913	839	877	917	958	1,001	1,046
Variable O&M (VOM) cost		0	395	394	317	306	267	268	273	289	297	311
Fuel cost		2,662	3,049	3,096	2,442	2,423	2,012	2,020	2,072	2,183	2,253	2,359
Capacity cost		2,371	3,370	3,401	3,403	3,804	3,574	3,477	3,407	3,339	3,273	3,209
Energy cost		2,662	3,444	3,490	2,759	2,728	2,279	2,288	2,344	2,472	2,550	2,671
Total generation cost		5,033	6,814	6,892	6,162	6,532	5,852	5,764	5,751	5,811	5,823	5,880
Capacity (MW)		643	643	643	523	523	423	423	423	423	423	423
Energy sent out (GWh)		2,989	3,016	2,827	2,169	2,001	1,614	1,551	1,509	1,530	1,504	1,510
Energy cost (Taka/kWh sent out)		0.9	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8
Capacity cost (Taka/kW/month)		307	437	441	542	606	704	685	671	658	645	632
Generation cost (Taka/kWh sent out)		1.7	2.3	2.4	2.8	3.3	3.6	3.7	3.8	3.8	3.9	3.9
GPSCL												
Return on net fixed assets		1,627	1,640	1,652	1,619	1,547	1,484	1,444	1,409	1,374	1,341	1,308
Depreciation		320	320	320	341	345	345	358	358	358	358	358
Fixed O&M (FOM) cost		0	1,388	1,482	1,563	1,637	1,637	1,711	1,708	1,785	1,865	1,949
Variable O&M (VOM) cost		0	535	560	564	557	497	499	483	512	526	551
Fuel cost		2,741	3,956	4,157	4,208	4,257	3,801	3,815	3,695	3,898	4,014	4,200
Capacity cost		1,947	3,348	3,454	3,523	3,529	3,466	3,513	3,475	3,517	3,564	3,614
Energy cost		2,741	4,492	4,718	4,773	4,814	4,298	4,314	4,178	4,410	4,539	4,752
Total generation cost		4,687	7,840	8,171	8,296	8,343	7,764	7,827	7,653	7,927	8,103	8,366
Capacity (MW)		862	862	862	862	862	825	825	788	788	788	788
Energy sent out (GWh)		3,197	3,991	3,911	3,736	3,517	3,004	2,887	2,675	2,714	2,665	2,674
Energy cost (Taka/kWh sent out)		0.9	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8
Capacity cost (Taka/kW/month)		188	324	334	341	341	350	355	367	372	377	382
Generation cost (Taka/kWh sent out)		1.5	2.0	2.1	2.2	2.4	2.6	2.7	2.9	2.9	3.0	3.1
EGCB												
Return on net fixed assets		202	844	1,445	1,365	1,368	1,902	2,796	3,130	2,995	2,862	2,729
Depreciation		320	320	766	766	766	847	1,377	1,388	1,349	1,349	1,349
Fixed O&M (FOM) cost		0	435	416	439	460	745	1,187	1,241	1,297	1,355	1,416
Variable O&M (VOM) cost		0	283	266	262	271	427	514	520	549	561	586
Fuel cost		1,174	2,107	1,962	1,935	2,001	2,820	3,415	3,469	3,655	3,742	3,907
Capacity cost		522	1,599	2,627	2,570	2,593	3,494	5,361	5,759	5,641	5,566	5,494
Energy cost		1,174	2,390	2,228	2,198	2,272	3,247	3,929	3,990	4,205	4,303	4,493
Total generation cost		1,696	3,989	4,855	4,767	4,865	6,741	9,290	9,749	9,845	9,869	9,987
Capacity (MW)		315	315	287	287	287	554	751	751	751	751	751
Energy sent out (GWh)		1,223	1,932	1,683	1,569	1,568	2,264	2,668	2,586	2,613	2,555	2,555
Energy cost (Taka/kWh sent out)		1.0	1.2	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.8
Capacity cost (Taka/kW/month)		138	423	763	746	753	526	595	639	626	618	610
Generation cost (Taka/kWh sent out)		1.4	2.1	2.9	3.0	3.1	3.0	3.5	3.8	3.8	3.9	3.9
IPPs and others												
Capacity payments		5,976	6,117	7,872	11,884	19,677	27,800	32,490	41,332	45,619	54,149	63,093
Energy payments		11,017	13,574	15,984	17,029	19,279	20,226	21,438	24,255	26,979	30,164	27,016
Total payments		16,993	19,692	23,856	28,913	38,956	48,026	53,928	65,588	72,598	84,313	90,110
Capacity (MW)		1,260	1,300	1,500	1,950	2,850	3,750	4,200	5,100	5,550	6,450	7,000
Energy sent out (GWh)		7,898	8,368	9,368	11,239	14,818	17,774	19,178	22,619	25,299	28,861	31,777
Energy cost (Taka/kWh purchased)		1.4	1.6	1.7	1.5	1.3	1.1	1.1	1.1	1.1	1.0	0.9
Capacity cost (Taka/kW/month)		395	392	437	508	575	618	645	675	685	700	751
Purchase cost (Taka/kWh purchased)		2.15	2.35	2.55	2.57	2.63	2.70	2.81	2.90	2.87	2.92	2.84
Total generation cost												
Capacity cost		16,321	21,672	26,564	32,743	42,129	51,904	61,599	72,162	76,481	85,350	92,770
Energy cost		26,731	32,646	37,659	39,467	40,581	41,673	45,458	48,369	52,762	56,626	55,798
Total generation cost		43,053	54,318	64,223	72,210	82,711	93,577	107,057	120,531	129,243	141,976	148,568
Capacity (MW)		4,354	4,456	4,870	5,447	6,264	7,492	8,586	9,449	9,979	10,879	11,579
Capacity (MW)		4,354	4,456	4,870	5,447	6,264	7,492	8,586	9,449	9,979	10,879	11,579
Energy sent out (GWh)		21,204	23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800
Energy sent out (GWh)		21,204	23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800
Energy cost (Taka/kWh purchased by SB)		1.3	1.4	1.5	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2
Capacity cost (Taka/kW/month)		312	405	455	501	560	577	598	636	639	654	668
Generation cost (Taka/kWh purchased by SB)		2.0	2.3	2.5	2.6	2.8	2.9	3.0	3.2	3.1	3.2	3.1

Single Buyer	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Taka million												
Return on net fixed assets			1	3	4	5	5	5	5	5	6	6
Depreciation			0	1	1	2	2	2	2	2	2	2
O&M cost, excl. power purchase cost			42	45	48	50	52	55	57	60	63	66
Total Single Buyer cost			43	49	53	56	59	61	64	67	71	74
Energy purchased (GWh)			23,373	25,462	27,664	30,028	32,586	35,207	38,021	41,050	44,302	47,800
SB cost (Taka/kWh purchased by SB)			0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002

Bulk Supply Tariff (BST)	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Taka million												
Generation cost		43,053	54,318	64,223	72,210	82,711	93,577	107,057	120,531	129,243	141,976	148,568
Single Buyer cost		0	43	49	53	56	59	61	64	67	71	74
Total bulk supply cost		43,053	54,361	64,272	72,264	82,767	93,636	107,118	120,595	129,311	142,046	148,642
Energy import to distribution (GWh)		20,462	22,555	24,571	26,696	28,992	31,479	34,027	36,766	39,716	42,884	46,294
Bulk supply tariff (Taka/kWh imported to distribution)		2.10	2.41	2.62	2.71	2.85	2.97	3.15	3.28	3.26	3.31	3.21
Growth rate of bulk supply tariff (% p.a.)				8.5%	3.5%	5.5%	4.2%	5.8%	4.2%	-0.7%	1.7%	-3.1%

Transmission (PGCB)	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Taka million												
Return on net fixed assets		2,752	2,660	2,864	4,166	5,122	5,792	6,811	7,282	7,623	7,967	8,319
Depreciation		1,802	1,802	1,802	2,061	2,800	2,866	3,449	3,763	4,002	4,248	4,505
O&M cost		593	683	754	880	928	1,041	1,126	1,208	1,294	1,388	1,489
Total transmission cost		5,146	5,144	5,420	7,107	8,849	9,699	11,386	12,252	12,920	13,603	14,313
Energy import to distribution (GWh)		20,462	22,555	24,571	26,696	28,992	31,479	34,027	36,766	39,716	42,884	46,294
Transmission cost (wheeling charge) (Taka/kWh imported)		0.25	0.23	0.22	0.27	0.31	0.31	0.33	0.33	0.33	0.32	0.31

Distribution	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Taka million												
DESA												
Return on net fixed assets		2,336	2,484	2,939	3,494	3,825	3,958	4,084	4,236	4,392	4,552	4,715
Depreciation		502	502	620	847	1,048	1,147	1,231	1,322	1,417	1,516	1,619
O&M cost, excl. power purchase		1,050	1,300	1,461	1,619	1,791	2,003	2,133	2,335	2,614	2,925	3,273
Total distribution cost		3,888	4,286	5,020	5,961	6,664	7,108	7,448	7,893	8,423	8,992	9,607
Energy sales (GWh)		3,590	4,006	4,467	4,963	5,509	6,115	6,745	7,433	8,191	9,018	9,929
Distribution cost (Taka/energy sold)		1.08	1.07	1.12	1.20	1.21	1.16	1.10	1.06	1.03	1.00	0.97
DESCO												
Return on net fixed assets		639	651	742	956	1,243	1,505	1,730	1,949	2,127	2,259	2,379
Depreciation		332	332	353	417	522	650	766	868	965	1,047	1,120
O&M cost, excl. power purchase		275	330	407	505	628	774	891	1,018	1,151	1,295	1,455
Total distribution cost		1,246	1,313	1,502	1,878	2,393	2,929	3,387	3,835	4,243	4,600	4,953
Energy sales (GWh)		1,536	1,731	1,938	2,134	2,349	2,587	2,830	3,096	3,387	3,705	4,053
Distribution cost (Taka/energy sold)		0.81	0.76	0.77	0.88	1.02	1.13	1.20	1.24	1.25	1.24	1.22
WZPDCL												
Return on net fixed assets		425	573	904	1,300	1,599	1,697	1,722	1,745	1,766	1,789	1,813
Depreciation		307	307	412	547	707	796	841	878	914	951	990
O&M cost, excl. power purchase		544	711	829	971	1,098	1,236	1,367	1,517	1,683	1,868	2,074
Total distribution cost		1,276	1,591	2,145	2,817	3,403	3,730	3,930	4,140	4,363	4,608	4,876
Energy sales (GWh)		1,111	1,261	1,384	1,518	1,665	1,827	1,991	2,170	2,366	2,579	2,811
Distribution cost (Taka/energy sold)		1.15	1.26	1.55	1.86	2.04	2.04	1.97	1.91	1.84	1.79	1.73
CZPDCL												
Return on net fixed assets		761	794	829	848	919	1,045	1,151	1,179	1,169	1,160	1,152
Depreciation		528	528	570	595	632	695	774	822	845	870	896
O&M cost, excl. power purchase		570	698	777	865	983	1,133	1,203	1,317	1,456	1,610	1,782
Total distribution cost		1,858	2,020	2,176	2,308	2,534	2,873	3,127	3,318	3,471	3,640	3,829
Energy sales (GWh)		735	834	915	1,003	1,101	1,207	1,316	1,435	1,564	1,704	1,858
Distribution cost (Taka/energy sold)		2.53	2.42	2.38	2.30	2.30	2.38	2.38	2.31	2.22	2.14	2.06
NZPDCL												
Return on net fixed assets		772	897	1,136	1,365	1,543	1,604	1,588	1,573	1,566	1,560	1,555
Depreciation		577	577	679	780	888	969	1,011	1,037	1,069	1,102	1,137
O&M cost, excl. power purchase		527	757	884	1,031	1,193	1,386	1,530	1,692	1,872	2,072	2,294
Total distribution cost		1,877	2,231	2,699	3,176	3,625	3,959	4,130	4,301	4,506	4,733	4,985
Energy sales (GWh)		986	1,119	1,228	1,347	1,477	1,621	1,767	1,926	2,099	2,288	2,494
Distribution cost (Taka/energy sold)		1.90	1.99	2.20	2.36	2.45	2.44	2.34	2.23	2.15	2.07	2.00
SZPDCL												
Return on net fixed assets		1,020	1,187	1,430	1,624	1,969	2,507	3,088	3,574	3,928	4,123	4,235
Depreciation		757	757	894	980	1,099	1,296	1,560	1,791	1,994	2,151	2,261
O&M cost, excl. power purchase		900	1,041	1,163	1,305	1,569	1,932	2,208	2,500	2,802	3,112	3,455
Total distribution cost		2,677	2,985	3,487	3,910	4,637	5,735	6,856	7,865	8,724	9,387	9,951
Energy sales (GWh)		2,243	2,546	2,793	3,064	3,361	3,687	4,018	4,380	4,774	5,204	5,672
Distribution cost (Taka/energy sold)		1.19	1.17	1.25	1.28	1.38	1.56	1.71	1.80	1.83	1.80	1.75
Total distribution cost												
Total distribution cost		12,823	14,425	17,028	20,051	23,256	26,332	28,878	31,352	33,729	35,961	38,202
Energy sales (GWh)		10,201	11,498	12,724	14,028	15,462	17,043	18,667	20,439	22,380	24,498	26,817
Distribution cost (Taka/energy sold)		1.26	1.25	1.34	1.43	1.50	1.55	1.55	1.53	1.51	1.47	1.42

Total electricity supply cost by distribution company FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Taka million											
DESA											
Bulk purchase (GWh)	5,126	5,581	6,075	6,593	7,152	7,763	8,377	9,035	9,750	10,516	11,347
Sales (GWh)	3,590	4,006	4,467	4,963	5,509	6,115	6,745	7,433	8,191	9,018	9,929
Bulk purchase	10,785	13,452	15,892	17,847	20,418	23,092	26,370	29,637	31,744	34,833	36,433
Wheeling charge	1,289	1,273	1,340	1,755	2,183	2,392	2,803	3,011	3,172	3,336	3,508
Distribution cost	3,888	4,286	5,020	5,961	6,664	7,108	7,448	7,893	8,423	8,992	9,607
Total DESA cost	15,961	19,011	22,252	25,562	29,265	32,592	36,622	40,540	43,339	47,161	49,549
Specific DESA supply cost (Taka/kWh)	3.32	4.75	4.98	5.15	5.31	5.33	5.43	5.45	5.29	5.23	4.99
DESCO											
Bulk purchase (GWh)	1,843	2,062	2,291	2,504	2,738	2,993	3,251	3,531	3,837	4,168	4,529
Sales (GWh)	1,536	1,731	1,938	2,134	2,349	2,587	2,830	3,096	3,387	3,705	4,053
Bulk purchase	3,878	4,969	5,993	6,779	7,815	8,902	10,234	11,584	12,491	13,807	14,541
Wheeling charge	464	470	505	667	836	922	1,088	1,177	1,248	1,322	1,400
Distribution cost	1,246	1,313	1,502	1,878	2,393	2,929	3,387	3,835	4,243	4,600	4,953
Total DESCO cost	5,587	6,752	8,000	9,324	11,044	12,752	14,708	16,595	17,983	19,729	20,895
Specific DESCO supply cost (Taka/kWh)	3.56	3.90	4.13	4.37	4.70	4.93	5.20	5.36	5.31	5.33	5.16
WZPDCL											
Bulk purchase (GWh)	1,381	1,554	1,690	1,838	2,000	2,175	2,351	2,542	2,748	2,971	3,212
Sales (GWh)	1,111	1,261	1,384	1,518	1,665	1,827	1,991	2,170	2,366	2,579	2,811
Bulk purchase	2,906	3,745	4,421	4,976	5,708	6,470	7,402	8,337	8,947	9,841	10,314
Wheeling charge	347	354	373	489	610	670	787	847	894	942	993
Distribution cost	1,276	1,591	2,145	2,817	3,403	3,730	3,930	4,140	4,363	4,608	4,876
Total WZPDCL cost	4,530	5,690	6,939	8,282	9,722	10,870	12,118	13,324	14,203	15,391	16,184
Specific WZPDCL supply cost (Taka/kWh)	3.50	4.51	5.01	5.46	5.84	5.95	6.09	6.14	6.00	5.97	5.76
CZPDCL											
Bulk purchase (GWh)	963	1,077	1,165	1,260	1,363	1,474	1,585	1,705	1,834	1,973	2,123
Sales (GWh)	735	834	915	1,003	1,101	1,207	1,316	1,435	1,564	1,704	1,858
Bulk purchase	2,026	2,596	3,046	3,410	3,890	4,386	4,991	5,593	5,971	6,536	6,817
Wheeling charge	242	246	257	335	416	454	530	568	597	626	656
Distribution cost	1,858	2,020	2,176	2,308	2,534	2,873	3,127	3,318	3,471	3,640	3,829
Total CZPDCL cost	4,126	4,861	5,479	6,053	6,840	7,713	8,648	9,479	10,038	10,802	11,303
Specific CZPDCL supply cost (Taka/kWh)	3.48	5.83	5.99	6.03	6.21	6.39	6.57	6.61	6.42	6.34	6.08
NZPDCL											
Bulk purchase (GWh)	1,226	1,380	1,500	1,632	1,775	1,930	2,087	2,255	2,438	2,636	2,850
Sales (GWh)	986	1,119	1,228	1,347	1,477	1,621	1,767	1,926	2,099	2,288	2,494
Bulk purchase	2,580	3,325	3,924	4,417	5,066	5,742	6,568	7,398	7,938	8,731	9,150
Wheeling charge	308	315	331	434	542	595	698	752	793	836	881
Distribution cost	1,877	2,231	2,699	3,176	3,625	3,959	4,130	4,301	4,506	4,733	4,985
Total NZPDCL cost	4,765	5,871	6,954	8,028	9,233	10,295	11,396	12,451	13,237	14,300	15,017
Specific NZPDCL supply cost (Taka/kWh)	3.39	5.25	5.66	5.96	6.25	6.35	6.45	6.47	6.31	6.25	6.02
SZPDCL											
Bulk purchase (GWh)	2,801	3,150	3,424	3,722	4,047	4,400	4,754	5,136	5,550	5,998	6,483
Sales (GWh)	2,243	2,546	2,793	3,064	3,361	3,687	4,018	4,380	4,774	5,204	5,672
Bulk purchase	5,893	7,591	8,956	10,075	11,552	13,088	14,965	16,848	18,072	19,868	20,815
Wheeling charge	704	718	755	991	1,235	1,356	1,591	1,712	1,806	1,903	2,004
Distribution cost	2,677	2,985	3,487	3,910	4,637	5,735	6,856	7,865	8,724	9,387	9,951
Total SZPDCL cost	9,275	11,294	13,199	14,976	17,424	20,178	23,411	26,425	28,601	31,158	32,770
Specific SZPDCL supply cost (Taka/kWh)	3.48	4.44	4.73	4.89	5.18	5.47	5.83	6.03	5.99	5.99	5.78
REB/PBS											
Bulk purchase from SB (excl. SPP) (GWh)	7,123	7,752	8,426	9,147	9,919	10,743	11,623	12,561	13,559	14,622	15,750
Bulk purchase	14,986	18,683	22,040	24,761	28,316	31,957	36,589	41,200	44,147	48,431	50,572
Wheeling charge	1,791	1,768	1,859	2,435	3,027	3,310	3,889	4,186	4,411	4,638	4,870
Total RPCL cost	16,777	20,451	23,899	27,196	31,344	35,267	40,478	45,385	48,558	53,069	55,441
Total (incl. REB/PBS)											
Bulk purchase (GWh)	20,462	22,555	24,571	26,696	28,992	31,479	34,027	36,766	39,716	42,884	46,294
Generation cost	43,053	54,318	64,223	72,210	82,711	93,577	107,057	120,531	129,243	141,976	148,568
Single Buyer cost	0	43	49	53	56	59	61	64	67	71	74
Bulk purchase	43,053	54,361	64,272	72,264	82,767	93,636	107,118	120,595	129,311	142,046	148,642
Transmission (wheeling charge)	5,146	5,144	5,420	7,107	8,849	9,699	11,386	12,252	12,920	13,603	14,313
Distribution cost (excl. REB/PBS)	12,823	14,425	17,028	20,051	23,256	26,332	28,878	31,352	33,729	35,961	38,202
Total cost	61,022	73,930	86,721	99,422	114,871	129,667	147,382	164,199	175,959	191,610	201,158
Total (excl. REB/PBS)											
Bulk purchase (GWh)	13,340	14,803	16,145	17,549	19,073	20,735	22,405	24,206	26,157	28,263	30,544
Sales (GWh)	10,201	11,498	12,724	14,028	15,462	17,043	18,667	20,439	22,380	24,498	26,817
Bulk purchase	28,066	35,678	42,232	47,503	54,450	61,679	70,530	79,396	85,164	93,615	98,071
Wheeling charge	3,355	3,376	3,561	4,672	5,822	6,389	7,497	8,066	8,509	8,965	9,443
Distribution cost	12,823	14,425	17,028	20,051	23,256	26,332	28,878	31,352	33,729	35,961	38,202
Total cost	44,244	53,479	62,822	72,225	83,527	94,400	106,904	118,814	127,402	138,540	145,716
Average specific supply cost (Taka/kWh)	**3.43**	**4.65**	**4.94**	**5.15**	**5.40**	**5.54**	**5.73**	**5.81**	**5.69**	**5.66**	**5.43**

Appendix E: Investment Program for the Power Sector

INVESTMENT PROGRAM	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Capital expenditure (Taka million)											
BPDB Generation		7,050	15,587	14,841	16,241	8,687	3,612	5,761	3,944	6,291	11,109
APSCL		3,441	813	2,002	0	0	0	0	0	0	0
GPSCL		438	89	81	279	0	0	0	0	0	0
EGCB		1,690	3,023	9,225	5,387	2,550	0	0	0	0	0
Subtotal generation public sector		**12,619**	**19,511**	**26,148**	**21,907**	**11,236**	**3,612**	**5,761**	**3,944**	**6,291**	**11,109**
IPP		1,945	16,604	35,031	32,107	38,345	35,062	44,491	54,698	51,444	22,976
Subtotal generation		**14,564**	**36,115**	**61,180**	**54,015**	**49,582**	**38,674**	**50,252**	**58,643**	**57,735**	**34,085**
Transmission (PGCB)		**9,790**	**15,964**	**12,012**	**12,227**	**6,550**	**8,814**	**7,676**	**8,021**	**8,382**	**8,759**
DESA		5,190	8,439	3,595	2,369	2,663	2,782	2,908	3,039	3,175	3,318
DESCO		1,248	2,616	3,712	3,939	3,012	3,109	2,732	2,150	2,246	2,415
WZPDCL		2,240	5,823	3,805	1,549	1,150	1,050	1,098	1,147	1,199	1,253
CZPDCL		560	958	1,243	2,534	2,184	694	725	758	792	828
NZPDCL		2,494	3,584	2,899	1,946	594	932	974	1,018	1,063	1,111
SZPDCL		1,983	3,222	3,868	7,960	7,892	5,967	6,201	3,253	3,301	3,347
Subtotal distribution		**13,715**	**24,642**	**19,122**	**20,298**	**17,495**	**14,535**	**14,638**	**11,364**	**11,777**	**12,273**
Total Sector		**38,069**	**76,721**	**92,314**	**86,540**	**73,626**	**62,023**	**72,566**	**78,027**	**77,894**	**55,116**
Exchange rate Taka/US$		65.5	68.2	70.2	71.7	73.1	74.5	76.0	77.4	79.0	80.5
Capital expenditure (US$ million)											
Public sector		192.8	286.3	372.7	305.6	153.7	48.5	75.8	50.9	79.7	138.0
IPP		29.7	243.6	499.4	447.9	524.7	470.5	585.7	706.2	651.5	285.4
Subtotal generation		**222.5**	**529.9**	**872.1**	**753.5**	**678.4**	**519.0**	**661.5**	**757.2**	**731.2**	**423.4**
Transmission (PGCB)		149.6	234.2	171.2	170.6	89.6	118.3	101.0	103.6	106.2	108.8
Distribution		209.5	361.5	272.6	283.1	239.4	195.1	192.7	146.7	149.2	152.5
Total Sector		**581.6**	**1,125.6**	**1,315.9**	**1,207.2**	**1,007.4**	**832.4**	**955.2**	**1,007.5**	**986.5**	**684.7**

Appendix F: Summary of Tariffs

SUMMARY OF TARIFFS	FY ending	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Consumer tariff scenarios (Taka/kWh)												
Business as usual		3.43	3.69	3.91	4.10	4.29	4.48	4.68	4.89	5.11	5.34	5.43
Cost-covering tariff (sector average)		3.43	4.65	4.94	5.15	5.40	5.54	5.73	5.81	5.69	5.66	5.43
Cost coverage reached in	2008	3.43	4.00	4.58	5.15	5.40	5.54	5.73	5.81	5.69	5.66	5.43
Consumer tariff scenario applied:												
Cost coverage reached in	2010	3.43	3.85	4.27	4.70	5.12	5.54	5.73	5.81	5.69	5.66	5.43
Generation tariff (per kWh sent out)												
Average			2.32	2.52	2.61	2.75	2.87	3.04	3.17	3.15	3.20	3.11
BPDB			2.63	2.67	2.69	2.96	3.18	3.39	3.68	3.72	3.88	3.69
APSCL			2.26	2.44	2.84	3.26	3.63	3.72	3.81	3.80	3.87	3.89
GPSCL			1.96	2.09	2.22	2.37	2.58	2.71	2.86	2.92	3.04	3.13
EGCB			2.06	2.88	3.04	3.10	2.98	3.48	3.77	3.77	3.86	3.91
IPPs			2.35	2.55	2.57	2.63	2.70	2.81	2.90	2.87	2.92	2.84
Transmission tariff (per kWh imported to distribution)												
PGCB (Wheeling charge)			0.23	0.22	0.27	0.31	0.31	0.33	0.33	0.33	0.32	0.31
Bulk Supply Tariff (per kWh imported to distribution)												
Average cost-covering BST			2.41	2.62	2.71	2.85	2.97	3.15	3.28	3.26	3.31	3.21
Average BST at selected consumer tariff scenario			1.79	2.09	2.34	2.62	2.97	3.15	3.28	3.25	3.31	3.21
Subsidized BST by company at selected tariff scenario												
DESA		1.86	1.69	2.02	2.28	2.62	3.05	3.30	3.49	3.50	3.58	3.50
DESCO		1.94	2.48	2.85	3.09	3.32	3.61	3.72	3.79	3.71	3.72	3.57
WZPDCL		1.94	1.93	2.07	2.14	2.31	2.69	2.90	3.06	3.05	3.10	2.99
CZPDCL		1.94	0.92	1.31	1.68	2.01	2.32	2.49	2.65	2.68	2.77	2.69
NZPDCL		1.94	1.25	1.45	1.63	1.88	2.26	2.50	2.69	2.70	2.76	2.66
SZPDCL		1.94	1.98	2.29	2.59	2.84	3.07	3.11	3.14	3.04	3.07	2.95
REB/PBS		1.84	2.41	2.62	2.71	2.85	2.97	3.15	3.28	3.26	3.31	3.21
Consumer tariff (per kWh sold)												
Cost covering tariff (sector average)		3.43	4.65	4.94	5.15	5.40	5.54	5.73	5.81	5.69	5.66	5.43
Consumer tariffs (average unit revenue of distribution company) at selected tariff scenario												
DESA		3.32	3.74	4.16	4.59	5.01	5.43	5.62	5.70	5.58	5.55	5.33
DESCO		3.56	3.98	4.40	4.82	5.25	5.67	5.86	5.94	5.82	5.78	5.56
WZPDCL		3.50	3.92	4.34	4.77	5.19	5.61	5.80	5.88	5.76	5.73	5.51
CZPDCL		3.48	3.90	4.32	4.74	5.17	5.59	5.78	5.86	5.74	5.70	5.48
NZPDCL		3.39	3.82	4.24	4.66	5.08	5.50	5.69	5.78	5.66	5.62	5.40
SZPDCL		3.48	3.90	4.32	4.75	5.17	5.59	5.78	5.86	5.74	5.71	5.48

Appendix G: Result of Financial Projections (Income Statement, Balance Sheet, Cash Flow, Performance Indicators)

- Sector (consolidated)
- BPDB Power Generation Company
- APSCL
- GPSCL
- EGCB
- PGCB
- Single Buyer
- DESA
- DESCO
- WZPDCL
- CZPDCL
- NZPDCL
- SZPDCL

Appendix H: Key Financial Indicators for the Sector and each Entity for Tariff Scenario:

- Full Cost Coverage
- Business as Usual
- Cost Coverage in 2010

Tariff Scenario – Full Cost Coverage

SECTOR	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return on equity (net income/equity)		7.3%	9.0%	11.4%	12.3%	12.7%	15.3%	15.7%	15.3%	15.0%	14.6%
Debt / equity ratio (debt/(debt+equity))		61.6%	66.6%	69.5%	71.1%	70.7%	69.3%	67.8%	66.5%	64.9%	63.8%
Debt service cover ratio (net revenue / debt service)		1.6	1.5	1.5	1.6	1.5	1.5	1.6	1.5	1.6	1.4
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		1,933	4,786	8,102	11,246	10,138	9,185	11,529	7,380	10,069	3,966

GENERATION	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BPDB Generation											
Return on equity (net income/equity)		6.0%	7.3%	11.6%	10.8%	9.0%	14.7%	15.9%	15.1%	14.2%	13.4%
Debt / equity ratio (debt/(debt+equity))		62%	68%	72%	75%	74%	72%	70%	69%	67%	67%
Debt service cover ratio (net revenue / debt service)		1.9	1.4	1.6	1.7	1.4	1.5	1.7	1.6	1.6	1.2
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8
Internal cash flow (Taka million)		482	307	1,236	1,859	1,117	2,279	3,863	1,495	3,191	-603
APSCL											
Return on equity (net income/equity)		10.4%	10.4%	13.8%	16.1%	14.3%	12.9%	10.5%	9.6%	8.9%	8.2%
Debt / equity ratio (debt/(debt+equity))		65%	64%	65%	62%	60%	57%	55%	51%	48%	43%
Debt service cover ratio (net revenue / debt service)		2.0	1.9	2.1	2.5	2.4	2.4	1.7	1.6	1.6	1.5
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		258	1,348	1,348	1,541	1,196	1,086	214	646	121	562
GPSCL											
Return on equity (net income/equity)		19.9%	19.9%	18.4%	16.1%	14.0%	12.8%	12.2%	11.8%	11.5%	11.2%
Debt / equity ratio (debt/(debt+equity))		55%	53%	49%	45%	40%	36%	32%	28%	24%	20%
Debt service cover ratio (net revenue / debt service)		1.5	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		1,419	-876	-103	-119	-160	468	29	98	9	100
EGCB											
Return on equity (net income/equity)		8.7%	17.9%	10.9%	5.3%	10.9%	21.9%	23.7%	21.9%	20.2%	18.8%
Debt / equity ratio (debt/(debt+equity))		58%	60%	73%	76%	76%	72%	68%	67%	62%	59%
Debt service cover ratio (net revenue / debt service)		0.9	1.5	1.3	1.5	1.5	1.8	2.0	1.9	1.7	1.6
Operating ratio (operating cost / operating revenue)		0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Internal cash flow (Taka million)		-146	1	-18	385	261	1,135	1,625	32	1,163	-208

TRANSMISSION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PGCB										
Return on equity (net income/equity)	3.7%	2.8%	6.7%	9.5%	9.9%	13.4%	13.7%	13.4%	13.2%	13.0%
Debt / equity ratio (debt/(debt+equity))	64%	72%	75%	77%	76%	76%	75%	74%	73%	72%
Debt service cover ratio (net revenue / debt service)	1.5	1.3	1.3	1.4	1.2	1.3	1.3	1.3	1.3	1.3
Operating ratio (operating cost / operating revenue)	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Internal cash flow (Taka million)	1,204	964	826	1,791	1,103	1,449	1,472	1,464	1,595	1,357

DISTRIBUTION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity (net income/equity)	10.1%	11.3%	13.8%	15.9%	16.5%	16.4%	16.2%	16.0%	15.9%	16.0%
Debt / equity ratio (debt/(debt+equity))	62%	68%	67%	66%	65%	63%	62%	61%	59%	58%
Debt service cover ratio (net revenue / debt service)	1.4	1.5	1.6	1.7	1.5	1.6	1.6	1.7	1.8	1.5
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	-76	1,161	1,574	1,017	410	821	1,064	1,149	1,120	449
DESCO										
Return on equity (net income/equity)	9.4%	7.4%	10.2%	12.9%	15.0%	16.5%	17.3%	17.5%	17.3%	16.8%
Debt / equity ratio (debt/(debt+equity))	61%	67%	71%	75%	76%	76%	75%	74%	72%	71%
Debt service cover ratio (net revenue / debt service)	2.3	1.6	1.7	1.7	1.5	1.6	1.6	1.6	1.7	1.5
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	36	149	292	791	1,057	612	706	815	959	853
WZPDCL										
Return on equity (net income/equity)	7.0%	11.4%	14.8%	18.2%	18.5%	17.6%	17.0%	16.5%	16.2%	15.8%
Debt / equity ratio (debt/(debt+equity))	63%	74%	76%	74%	72%	69%	67%	65%	64%	62%
Debt service cover ratio (net revenue / debt service)	1.5	1.6	1.8	1.6	1.5	1.4	1.5	1.5	1.6	1.6
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Internal cash flow (Taka million)	105	355	709	906	941	496	403	419	414	454
CZPDCL										
Return on equity (net income/equity)	14.4%	15.4%	15.6%	16.0%	16.5%	17.6%	18.0%	17.5%	17.2%	16.7%
Debt / equity ratio (debt/(debt+equity))	57%	56%	56%	59%	60%	59%	57%	56%	54%	52%
Debt service cover ratio (net revenue / debt service)	2.1	2.1	2.2	2.2	2.3	1.9	2.0	2.1	2.1	2.2
Operating ratio (operating cost / operating revenue)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	659	637	632	788	946	441	588	572	684	658
NZPDCL										
Return on equity (net income/equity)	10.1%	12.3%	14.2%	15.5%	15.4%	15.4%	14.9%	14.5%	14.1%	13.8%
Debt / equity ratio (debt/(debt+equity))	60%	64%	66%	64%	61%	60%	57%	56%	54%	53%
Debt service cover ratio (net revenue / debt service)	1.8	1.7	1.9	2.0	1.9	1.7	1.8	1.8	1.8	1.9
Operating ratio (operating cost / operating revenue)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Internal cash flow (Taka million)	607	699	995	1,286	1,376	123	846	370	809	489
SZPDCL										
Return on equity (net income/equity)	8.0%	11.1%	11.4%	12.5%	13.5%	15.1%	15.9%	16.1%	16.2%	16.0%
Debt / equity ratio (debt/(debt+equity))	59%	58%	59%	64%	67%	67%	67%	65%	64%	63%
Debt service cover ratio (net revenue / debt service)	1.8	1.8	1.7	1.8	1.8	1.7	1.8	1.6	1.7	1.7
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	1,208	1,144	1,188	1,465	1,994	1,382	1,877	1,544	1,288	1,209

Tariff Scenario – Business as Usual

SECTOR	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return on equity (net income/equity)		-5.4%	-5.4%	-4.0%	-4.8%	-4.2%	-1.7%	0.6%	5.6%	9.5%	14.6%
Debt / equity ratio (debt/(debt+equity))		61.6%	66.6%	69.6%	71.2%	70.9%	69.5%	68.0%	66.7%	65.0%	63.9%
Debt service cover ratio (net revenue / debt service)		0.9	0.8	0.9	1.0	0.9	1.0	1.1	1.2	1.4	1.4
Operating ratio (operating cost / operating revenue)		0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Internal cash flow (Taka million)		-6,977	-8,400	-6,571	-5,986	-8,194	-10,359	-7,539	-6,607	1,711	2,903

GENERATION	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BPDB Generation											
Return on equity (net income/equity)		6.0%	7.3%	11.6%	10.8%	9.0%	14.7%	15.9%	15.1%	14.2%	13.4%
Debt / equity ratio (debt/(debt+equity))		62%	68%	72%	75%	74%	72%	70%	69%	67%	67%
Debt service cover ratio (net revenue / debt service)		1.9	1.4	1.6	1.7	1.4	1.5	1.7	1.6	1.6	1.2
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8
Internal cash flow (Taka million)		482	307	1,236	1,859	1,117	2,279	3,863	1,495	3,191	-603
APSCL											
Return on equity (net income/equity)		10.4%	10.4%	13.8%	16.1%	14.3%	12.9%	10.5%	9.6%	8.9%	8.2%
Debt / equity ratio (debt/(debt+equity))		65%	64%	65%	62%	60%	57%	55%	51%	48%	43%
Debt service cover ratio (net revenue / debt service)		2.0	1.9	2.1	2.5	2.4	2.4	1.7	1.6	1.6	1.5
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		258	1,348	1,348	1,541	1,196	1,086	214	646	121	562
GPSCL											
Return on equity (net income/equity)		19.9%	19.9%	18.4%	16.1%	14.0%	12.8%	12.2%	11.8%	11.5%	11.2%
Debt / equity ratio (debt/(debt+equity))		55%	53%	49%	45%	40%	36%	32%	28%	24%	20%
Debt service cover ratio (net revenue / debt service)		1.5	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		1,419	-876	-103	-119	-160	468	29	98	9	100
EGCB											
Return on equity (net income/equity)		8.7%	17.9%	10.9%	5.3%	10.9%	21.9%	23.7%	21.9%	20.2%	18.8%
Debt / equity ratio (debt/(debt+equity))		58%	60%	73%	76%	76%	72%	68%	67%	62%	59%
Debt service cover ratio (net revenue / debt service)		0.9	1.5	1.3	1.5	1.5	1.8	2.0	1.9	1.7	1.6
Operating ratio (operating cost / operating revenue)		0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Internal cash flow (Taka million)		-146	1	-18	385	261	1,135	1,625	32	1,163	-208

TRANSMISSION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PGCB										
Return on equity (net income/equity)	3.7%	2.8%	6.7%	9.5%	9.9%	13.4%	13.7%	13.4%	13.2%	13.0%
Debt / equity ratio (debt/(debt+equity))	64%	72%	75%	77%	76%	76%	75%	74%	73%	72%
Debt service cover ratio (net revenue / debt service)	1.5	1.3	1.3	1.4	1.2	1.3	1.3	1.3	1.3	1.3
Operating ratio (operating cost / operating revenue)	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Internal cash flow (Taka million)	1,204	964	826	1,791	1,103	1,449	1,472	1,464	1,595	1,357

DISTRIBUTION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity (net income/equity)	10.1%	11.1%	13.5%	15.5%	16.1%	16.1%	16.0%	15.8%	15.8%	16.0%
Debt / equity ratio (debt/(debt+equity))	62%	68%	67%	66%	65%	64%	62%	61%	59%	58%
Debt service cover ratio (net revenue / debt service)	1.4	1.4	1.6	1.6	1.5	1.5	1.6	1.7	1.8	1.5
Operating ratio (operating cost / operating revenue)	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	-176	1,150	1,578	1,037	405	741	1,032	1,092	1,146	421
DESCO										
Return on equity (net income/equity)	9.3%	7.3%	10.0%	12.7%	14.7%	16.3%	17.1%	17.5%	17.3%	16.9%
Debt / equity ratio (debt/(debt+equity))	61%	67%	71%	75%	76%	76%	75%	74%	72%	71%
Debt service cover ratio (net revenue / debt service)	2.2	1.6	1.7	1.7	1.5	1.6	1.6	1.6	1.7	1.5
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	69	147	288	793	1,051	600	682	765	918	815
WZPDCL										
Return on equity (net income/equity)	6.6%	10.9%	14.4%	17.8%	18.0%	17.3%	16.7%	16.3%	16.1%	15.9%
Debt / equity ratio (debt/(debt+equity))	63%	74%	76%	75%	72%	70%	67%	66%	64%	62%
Debt service cover ratio (net revenue / debt service)	1.5	1.6	1.8	1.6	1.5	1.4	1.4	1.5	1.5	1.6
Operating ratio (operating cost / operating revenue)	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Internal cash flow (Taka million)	125	342	693	892	920	471	394	406	425	460
CZPDCL										
Return on equity (net income/equity)	13.6%	14.6%	14.8%	15.1%	15.7%	16.8%	17.3%	17.3%	17.2%	17.1%
Debt / equity ratio (debt/(debt+equity))	57%	56%	57%	60%	61%	60%	58%	56%	55%	53%
Debt service cover ratio (net revenue / debt service)	2.0	2.1	2.1	2.1	2.2	1.9	2.0	2.0	2.1	2.2
Operating ratio (operating cost / operating revenue)	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	698	563	655	706	934	388	587	513	684	616
NZPDCL										
Return on equity (net income/equity)	9.7%	12.0%	13.8%	15.0%	14.9%	14.9%	14.5%	14.3%	14.1%	13.9%
Debt / equity ratio (debt/(debt+equity))	60%	64%	66%	64%	61%	60%	58%	57%	55%	54%
Debt service cover ratio (net revenue / debt service)	1.8	1.7	1.9	1.9	1.8	1.7	1.7	1.8	1.8	1.9
Operating ratio (operating cost / operating revenue)	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9
Internal cash flow (Taka million)	679	676	963	1,251	1,335	119	816	359	758	486
SZPDCL										
Return on equity (net income/equity)	7.7%	10.8%	11.1%	12.1%	13.1%	14.8%	15.7%	16.1%	16.3%	16.2%
Debt / equity ratio (debt/(debt+equity))	59%	58%	59%	64%	68%	68%	68%	66%	65%	63%
Debt service cover ratio (net revenue / debt service)	1.7	1.8	1.6	1.7	1.8	1.7	1.8	1.6	1.6	1.7
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	1,383	982	1,126	1,399	1,897	1,329	1,801	1,452	1,309	1,208

Tariff Scenario – Cost Coverage in 2010

SECTOR	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return on equity (net income/equity)		-3.2%	-0.3%	4.8%	7.9%	12.7%	15.3%	15.7%	15.3%	15.0%	14.6%
Debt / equity ratio (debt/(debt+equity))		61.6%	66.6%	69.6%	71.1%	70.8%	69.4%	67.9%	66.6%	64.9%	63.9%
Debt service cover ratio (net revenue / debt service)		1.0	1.1	1.3	1.5	1.5	1.5	1.6	1.5	1.6	1.4
Operating ratio (operating cost / operating revenue)		0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		-5,457	-4,177	1,199	6,313	9,381	9,195	11,543	7,351	10,089	3,935

GENERATION	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BPDB Generation											
Return on equity (net income/equity)		6.0%	7.3%	11.6%	10.8%	9.0%	14.7%	15.9%	15.1%	14.2%	13.4%
Debt / equity ratio (debt/(debt+equity))		62%	68%	72%	75%	74%	72%	70%	69%	67%	67%
Debt service cover ratio (net revenue / debt service)		1.9	1.4	1.6	1.7	1.4	1.5	1.7	1.6	1.6	1.2
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8
Internal cash flow (Taka million)		482	307	1,236	1,859	1,117	2,279	3,863	1,495	3,191	-603
APSCL											
Return on equity (net income/equity)		10.4%	10.4%	13.8%	16.1%	14.3%	12.9%	10.5%	9.6%	8.9%	8.2%
Debt / equity ratio (debt/(debt+equity))		65%	64%	65%	62%	60%	57%	55%	51%	48%	43%
Debt service cover ratio (net revenue / debt service)		2.0	1.9	2.1	2.5	2.4	2.4	1.7	1.6	1.6	1.5
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		258	1,348	1,348	1,541	1,196	1,086	214	646	121	562
GPSCL											
Return on equity (net income/equity)		19.9%	19.9%	18.4%	16.1%	14.0%	12.8%	12.2%	11.8%	11.5%	11.2%
Debt / equity ratio (debt/(debt+equity))		55%	53%	49%	45%	40%	36%	32%	28%	24%	20%
Debt service cover ratio (net revenue / debt service)		1.5	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1
Operating ratio (operating cost / operating revenue)		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)		1,419	-876	-103	-119	-160	468	29	98	9	100
EGCB											
Return on equity (net income/equity)		8.7%	17.9%	10.9%	5.3%	10.9%	21.9%	23.7%	21.9%	20.2%	18.8%
Debt / equity ratio (debt/(debt+equity))		58%	60%	73%	76%	76%	72%	68%	67%	62%	59%
Debt service cover ratio (net revenue / debt service)		0.9	1.5	1.3	1.5	1.5	1.8	2.0	1.9	1.7	1.6
Operating ratio (operating cost / operating revenue)		0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7
Internal cash flow (Taka million)		-146	1	-18	385	261	1,135	1,625	32	1,163	-208

TRANSMISSION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PGCB										
Return on equity (net income/equity)	3.7%	2.8%	6.7%	9.5%	9.9%	13.4%	13.7%	13.4%	13.2%	13.0%
Debt / equity ratio (debt/(debt+equity))	64%	72%	75%	77%	76%	76%	75%	74%	73%	72%
Debt service cover ratio (net revenue / debt service)	1.5	1.3	1.3	1.4	1.2	1.3	1.3	1.3	1.3	1.3
Operating ratio (operating cost / operating revenue)	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Internal cash flow (Taka million)	1,204	964	826	1,791	1,103	1,449	1,472	1,464	1,595	1,357

DISTRIBUTION	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DESA										
Return on equity (net income/equity)	10.1%	11.2%	13.7%	15.8%	16.5%	16.4%	16.2%	16.0%	15.9%	15.9%
Debt / equity ratio (debt/(debt+equity))	62%	68%	67%	66%	65%	63%	62%	61%	59%	58%
Debt service cover ratio (net revenue / debt service)	1.4	1.4	1.6	1.7	1.5	1.6	1.6	1.7	1.8	1.5
Operating ratio (operating cost / operating revenue)	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	-159	1,162	1,573	1,009	367	865	1,065	1,149	1,120	449
DESCO										
Return on equity (net income/equity)	9.3%	7.3%	10.1%	12.9%	15.0%	16.5%	17.3%	17.6%	17.3%	16.8%
Debt / equity ratio (debt/(debt+equity))	61%	67%	71%	75%	76%	76%	75%	74%	72%	71%
Debt service cover ratio (net revenue / debt service)	2.2	1.6	1.7	1.7	1.5	1.6	1.6	1.6	1.7	1.5
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Internal cash flow (Taka million)	64	139	277	777	1,031	612	705	813	957	849
WZPDCL										
Return on equity (net income/equity)	6.7%	11.1%	14.6%	18.1%	18.5%	17.7%	17.0%	16.5%	16.2%	15.9%
Debt / equity ratio (debt/(debt+equity))	63%	74%	76%	74%	72%	69%	67%	65%	64%	62%
Debt service cover ratio (net revenue / debt service)	1.5	1.6	1.8	1.6	1.5	1.4	1.5	1.5	1.6	1.6
Operating ratio (operating cost / operating revenue)	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Internal cash flow (Taka million)	121	339	692	892	923	495	403	419	414	454
CZPDCL										
Return on equity (net income/equity)	13.8%	14.9%	15.3%	15.8%	16.7%	17.8%	18.1%	17.7%	17.3%	16.9%
Debt / equity ratio (debt/(debt+equity))	57%	56%	57%	60%	61%	59%	57%	56%	54%	53%
Debt service cover ratio (net revenue / debt service)	2.0	2.1	2.2	2.2	2.3	1.9	2.0	2.1	2.1	2.2
Operating ratio (operating cost / operating revenue)	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	691	569	648	728	953	416	612	547	707	634
NZPDCL										
Return on equity (net income/equity)	9.8%	12.1%	14.0%	15.4%	15.4%	15.4%	14.9%	14.5%	14.2%	13.8%
Debt / equity ratio (debt/(debt+equity))	60%	64%	66%	64%	61%	60%	57%	56%	55%	53%
Debt service cover ratio (net revenue / debt service)	1.8	1.7	1.9	2.0	1.9	1.7	1.7	1.8	1.8	1.9
Operating ratio (operating cost / operating revenue)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Internal cash flow (Taka million)	667	667	961	1,261	1,361	121	849	370	807	489
SZPDCL										
Return on equity (net income/equity)	7.8%	10.9%	11.3%	12.4%	13.6%	15.2%	16.0%	16.2%	16.3%	16.1%
Debt / equity ratio (debt/(debt+equity))	59%	58%	59%	64%	67%	68%	68%	66%	64%	63%
Debt service cover ratio (net revenue / debt service)	1.7	1.8	1.6	1.7	1.8	1.7	1.8	1.6	1.7	1.7
Operating ratio (operating cost / operating revenue)	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8
Internal cash flow (Taka million)	1,353	987	1,114	1,408	1,938	1,377	1,865	1,540	1,288	1,205

Appendix I: Impact on Government Accounts (Tariff Scenario – Cost Coverage in 2010)

Tariff Scenario – Cost Coverage in 2010

GOVERNMENT ACCOUNTS	FY ending	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
in Taka million											
Subsidies											
Subsidies paid											
to distribution companies		9,189	8,444	6,361	4,414	0	0	0	0	0	0
to REB/PBS		0	0	0	0	0	0	0	0	0	0
Total subsidies		**9,189**	**8,444**	**6,361**	**4,414**	**0**	**0**	**0**	**0**	**0**	**0**
Funding gap		0	0	0	0	0	0	0	0	0	0
Disbursement of loans											
Foreign loans in disbursement		9,938	16,140	8,883	4,110	0	0	0	0	0	0
New foreign loans		5,554	18,912	28,313	33,351	24,699	18,876	19,655	16,333	18,518	22,501
New local loans		7,034	16,291	12,538	9,619	2,725	1,694	1,365	942	1,059	1,043
Subtotal disbursement of loans		**22,526**	**51,342**	**49,734**	**47,081**	**27,424**	**20,570**	**21,020**	**17,276**	**19,577**	**23,544**
Repayment of loans											
Old foreign loans		2,811	2,708	2,787	2,848	2,904	2,960	3,018	3,077	3,137	3,198
Old local loans		4,716	4,716	4,716	4,716	4,716	4,716	4,716	4,716	4,716	4,716
Foreign loans in disbursement		2,280	4,050	4,613	3,951	4,757	4,850	4,900	4,737	4,509	4,597
New foreign loans		0	467	928	1,702	4,276	7,087	7,633	9,190	9,743	12,063
New local loans		0	0	0	105	680	893	1,358	1,943	2,566	3,140
Subtotal repayment		**9,806**	**11,942**	**13,044**	**13,322**	**17,333**	**20,507**	**21,625**	**23,663**	**24,670**	**27,713**
Interest payments											
Old foreign loans		1,889	1,828	1,742	1,638	1,525	1,406	1,283	1,154	1,020	880
Old local loans		3,419	3,183	2,947	2,712	2,476	2,240	2,004	1,768	1,533	1,297
Foreign loans in disbursement		738	1,600	2,155	2,151	2,646	2,453	2,383	2,191	2,001	1,808
New foreign loans		278	750	1,931	3,465	4,849	5,759	6,473	7,084	7,624	8,257
New local loans		352	759	1,480	2,031	2,320	2,391	2,411	2,386	2,324	2,234
Subtotal interest payments		**6,676**	**8,120**	**10,256**	**11,996**	**13,815**	**14,249**	**14,554**	**14,584**	**14,500**	**14,475**
Total debt service		**16,482**	**20,062**	**23,299**	**25,318**	**31,148**	**34,756**	**36,179**	**38,247**	**39,171**	**42,189**
Equity paid to:											
BPDB Generation		0	0	0	0	0	0	0	0	0	0
APSCL		0	0	0	0	0	0	0	0	0	0
GPSCL		0	0	0	0	0	0	0	0	0	0
EGCB		0	0	0	0	0	0	0	0	0	0
PGCB		0	0	0	0	0	0	0	0	0	0
DESA		0	0	0	0	0	0	0	0	0	0
DESCO		0	0	0	0	0	0	0	0	0	0
WZPDCL		0	0	0	0	0	0	0	0	0	0
CZPDCL		0	0	0	0	0	0	0	0	0	0
NZPDCL		0	0	0	0	0	0	0	0	0	0
SZPDCL		0	0	0	0	0	0	0	0	0	0
Total equity paid		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Dividends received from:											
BPDB Generation		0	0	0	0	0	0	0	2,134	409	1,712
APSCL		0	0	432	166	569	114	526	13	496	0
GPSCL		0	863	0	0	0	0	468	374	472	384
EGCB		0	0	0	0	0	0	0	1,455	0	1,163
PGCB		0	0	0	0	0	0	0	0	0	0
DESA		0	0	0	495	793	360	391	583	821	988
DESCO		0	0	0	0	0	0	0	0	0	0
WZPDCL		0	0	0	0	0	0	180	253	329	383
CZPDCL		0	216	235	252	219	374	295	428	319	455
NZPDCL		0	0	0	0	0	733	36	593	210	610
SZPDCL		0	92	0	0	0	0	0	5	569	867
Total dividends received		**0**	**1,171**	**667**	**912**	**1,580**	**1,582**	**1,896**	**5,838**	**3,625**	**6,564**
Tax received from:											
BPDB Generation		385	485	822	822	725	1,278	1,526	1,526	1,509	1,490
APSCL		243	259	359	441	409	384	323	305	292	275
GPSCL		518	551	544	529	504	502	506	510	514	518
EGCB		190	426	284	144	313	700	873	868	852	853
PGCB		210	163	400	595	659	966	1,069	1,145	1,222	1,308
DESA		438	519	688	856	946	1,005	1,075	1,142	1,212	1,285
DESCO		115	95	139	190	243	295	342	388	426	459
WZPDCL		98	173	247	339	389	415	440	459	480	498
CZPDCL		234	271	292	318	356	402	434	448	464	477
NZPDCL		199	264	332	399	440	462	469	482	492	503
SZPDCL		255	378	418	494	586	719	833	934	1,021	1,068
Total tax received		**2,884**	**3,584**	**4,525**	**5,127**	**5,571**	**7,127**	**7,890**	**8,206**	**8,484**	**8,733**