CHAPTER-10
POWER AND ENERGY

Power

Power is a critical input to the development process of a country. One of the pre-conditions for development is, therefore, generation of power according to demand and its planned and appropriate use. There is a huge demand for electricity in our day-to- day life including industry, agriculture and service sectors. Against the backdrop of expansion of electricity use in rural areas during recent times, the scale of demand for electricity in agriculture, SMEs and in income generating activities is on the increase. This, in effect, is making substantial contribution towards achieving economic development including the development of agriculture. As a result, the standard of living is improving and people are rising gradually above the poverty line. The major organisations, engaged in power generation, transmission and distribution activities in our country include Bangladesh Power Development Board (BPDB), Rural Electrification Board (REB), Dhaka Electric Supply Authority (DESA), Dhaka Electric Supply Company (DESCO) and Power Grid Company of Bangladesh (PGCB). This organisational network is engaged in meeting the electricity demand across the country. However, recently the nationwide power production and utalisation programmes are being strengthened by involving the private sector. According to the vision statement, the avowed goal of the Government is to ensure access to electricity for each household by 2020. The share of electricity sub-sector in GDP and its growth over the last five years have been shown in Table 10.1 below:

Table 10.1: Share (%) of electricity sub-sector in GDP and its growth over the last five years.

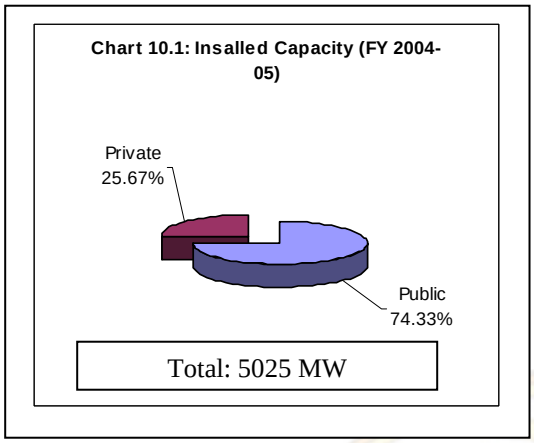
	2000-01	2001-02	2002-03	2003-04	2004-05 (Provisional)
Share of electricity sub-sector (%)	1.23	1.27	1.30	1.34	1.22
Growth of electricity Sub-sector (%)	7.6	7.78	7.29	9.19	9.22

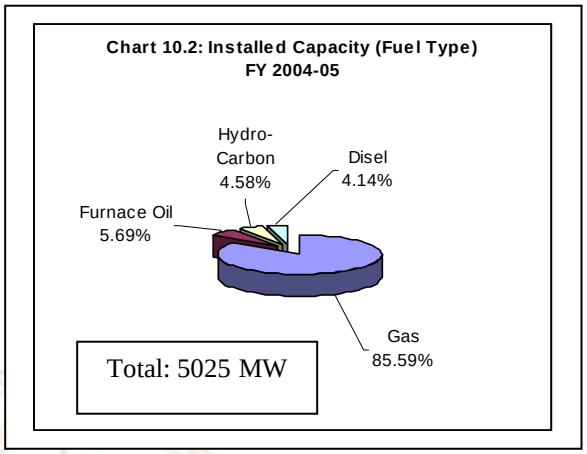
Source: Bangladesh Bureau of Statistics (BBS)

Power Generation Capacity and Demand

In FY 2004-05, the total installed generation capacity was 5025 MW of which the share of public sector is 3735 MW while the private sector accounts for the rest 1290 MW. In the public sector, a good number of generation units have become too old and have been operating at much reduced capacity. As a result, their reliability and productivity are also poor. Over the last few years, the

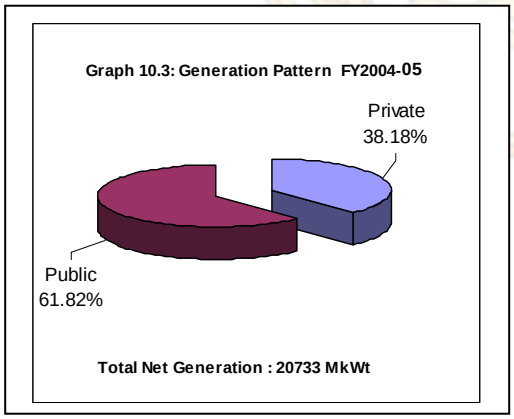
actual demand could not be met due to the shortage of available generation capacity. In FY 2004-2005 maximum demand of 3751 MW (PDB 2482 MW and IPP 1269 MW) was met. The installed generation in public and private sector during FY 2004-05 is shown in graph 10.1 and 10.2 below:

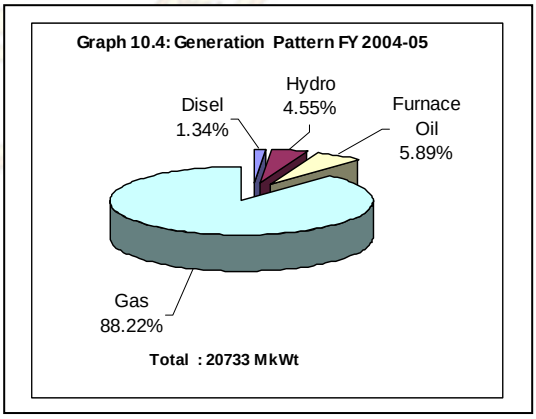




Power Generation and Consumption

About 20733 million-kilowatt hour (MKWh) net energy including 12817 MKWh in public sector and 7926 MKWh in private sector was generated during FY 2004-05. Of the total net power generation, 61.82 percent was generated in public sector and 38.18 percent in the private sector. This energy generation was 3.34 percent higher than what it was in previous fiscal year. Of the total energy generation 88.22 percent was gas-based, 4.55 percent hydro-based and 7.23 percent oil-based. The per capita electricity generation was 154 kilowatt hour in FY 2003-04, which was increased to 160-kilowatt hour in FY 2004-05. Rate of net power generation is shown in the graph 10.3 and 10.4 below:





Bangladesh Power Development Board consumed 8841mcft. gas for generating power in FY 1975-76, which increased to 142321 mcft. in FY 2004-05. The table 10.2 shows the time series data of the natural gas and other liquid fuel consumption by BPDB:

Table 10.2: Natural Gas and other Fuel consumption by BPDB.

Financial year	Natural Gas (million cft)	Liquid fuel (million gallons)		
		Naphtha	Furnace Oil	HSD,SKO & LDO
1975-76	8841	2.924	18.021	0.086
1976-77	10850	4.159	16.512	14.955
1977-78	13081	4.094	17.771	22.740
1978-79	14590	2.207	28.253	18.592
1979-80	15941	0.563	22.801	29.611
1980-81	18904	-	15.106	46.081
1981-82	22251	-	17.046	50.509
1982-83	27698	0.175	26.415	24.907
1983-84	30299	0.998	38.624	19.062
1984-85	38116	0.450	44.260	20.734
1985-86	34810	-	62.374	31.356
1986-87	51774	-	43.791	20.759
1987-88	59221	-	50.938	11.441
1988-89	62292	-	26.993	22.790
1989-90	72461	-	11.772	17.166
1990-91	78258	-	3.901	8.941
1991-92	83803	-	15.153	16.673
1992-93	88117	-	28.002	20.727
1993-94	92064	-	26.997	25.037
1994-95	103908	-	26.054	47.700
1995-96	106593	-	16.629	44.113
1996-97	107240	-	27.389	66.915
1997-98	120376	-	23.865	70.431
1998-99	136802	-	11.692	53.916
1999-00	141330	-	30.220	24.311
2000-01	151312	-	25.088	20.243
2001-02	151577	-	22.464	14.521
2002-03	131180	-	33.927	16.300
2003-04	134482	-	46.021	25.152
2004-05	142321	-	49.052	34.294

Source: Bangladesh Power Development Board

Total electricity consumption in PDB system was 18523.36 MKWh in FY 2004-05. The share of total PDB's consumption was 26.93 percent to DESA, 9.47 percent to DESCO, 36.92 percent to REB and 26.68 percent to BPDB's own retail consumers.

Maximum Power Generation

Though the installed capacity has increased considerably but due to shortage of available generation capacity, the actual demand could not be met over the last few years. So maximum generation of 1672 MW in 1991-92, 2114 MW in 1996-97, 2449 MW in 1998-1999, 2665 MW in 1999-2000, 3033 MW in 2000-01, 3218 MW in 2001-2002, 3458 MW in 2002-03 and 3622 MW

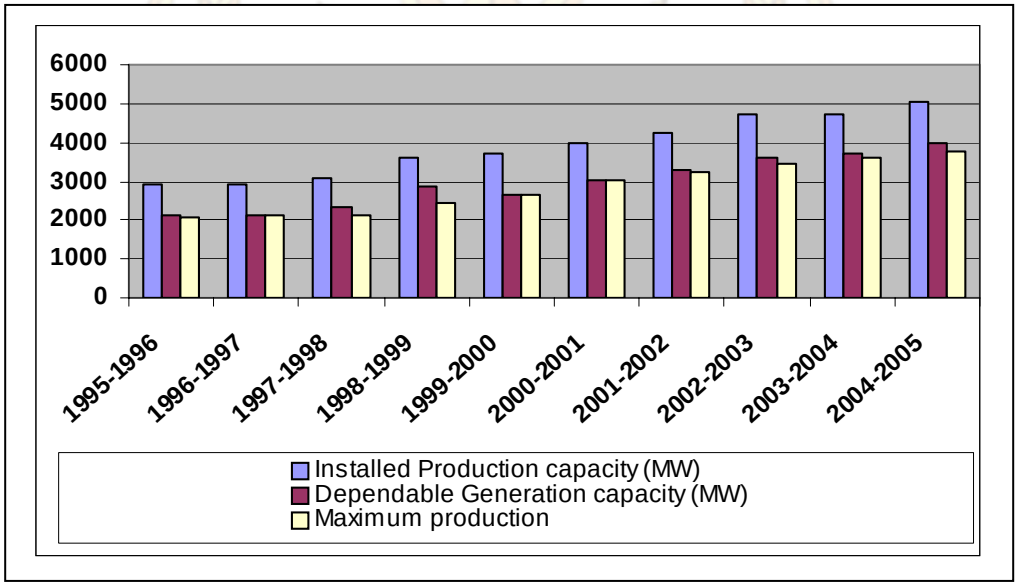
in 2003-04 could not meet the endemic shortage of power supply in the country. In FY 2004-05 maximum power generation was 3751MW and it is expected that it will increase further. The installed capacity, dependable generation capability and maximum generation over the last few years are shown in table 10.3 below:

Table 10.3: Installed Capacity, Dependable Generation Capacity and Maximum Generation.

Financial year	Installed Generation capacity (MW)	Dependable Generation capacity (MW)	Maximum Generation (MW)
1995-1996	2908	2105	2087
1996-1997	2908	2148	2114
1997-1998	3091	2320	2136
1998-1999	3611	2850	2449
1999-2000	3711	2665	2665
2000-2001	4005	3033	3033
2001-2002	4230	3300	3218
2002-2003	4710	3600	3458
2003-2004	4710	3700	3622
2004-2005	5025	4000	3751

Source: Bangladesh Power Development Board

Graph 10.5: Installed Capacity, Dependable Generation Capacity and Maximum Generation.



Power Supply Situation

Due to shortage of available generation capacity compared to the demand, the actual demand could not be met over the last few years. Following implementation of various urgent measures to improve the situation as well as commissioning of some new power plants, the situation has improved considerably with remarkable reduction in load shedding.

Power Distribution System

Distribution system of PDB comprises of 33 KV, 11 KV and 0.4 KV lines. In FY 1991-92 the total distribution line was 32780 Km, which has increased to 44,582 Km in FY 2004-05. The number of consumers has also increased from 9,03,001 to 18,90,000 in FY 2004-05.

System Loss and Outstanding Bill.

Government is committed to reduce the system loss to an acceptable limit. Various measures are underway to reduce the system loss. As of FY 2004-2005 BPDB's system loss (on net generation) has come down to 8.83 percent from 10.16 percent in the previous year. Besides this, outstanding accounts receivable is a problem for BPDB. As of June 2005 receivable amount of BPDB from different public and private institutions is Tk. 4397.71 crore and accounts payable is Tk. 5460.22 crore. Accounts receivable and accounts payable of BPDB during the last previous years are shown in Table 10.4 below:

Table 10.4: Accounts Receivable and Accounts Payable of BPDB.

Financial year	System loss (% of Net production	Receivable of Arrear (crore Tk.)	Liability (crore Tk.)
1991-1992	28.3	446.37	----
1992-1993	20.6	567.89	----
1993-1994	19.2	795.25	----
1994-1995	17.7	958.56	----
1995-1996	17.0	1100.82	----
1996-1997	16.0	1348.23	----
1997-1998	16.5	1729.81	---
1998-1999	16.8	2464.53	----
1999-2000	15.4	2789.22	01-07-91 to 31-6-2000 cumulative 4275.43
2000-2001	13.85	3354.99	4905.64
2001-2002	12.62	3671.74	5647.73
2002-2003	11.35	3993.80	4778.29
2003-2004	10.16	4368.10	5177.92
2004-2005	8.83	4397.71	5460.22

Source: Bangladesh Power Development Board.

The above table indicates that up to June, 2005 the accounts receivable of BPDB is Tk. 4397.71 crore and the accounts payable is Tk. 5460.22 crore.

Development Programmes

As per Reference Forecast of Power System Master Plan of 1995, the maximum electricity demand in FY 2006-07 would be in the neighbourhood of 5368 MW. The Government has taken initiatives to install necessary new power plants in phases to meet the projected demand along with achieving a reasonable reserve margin by FY 2006-07. The development projects planned to be implemented by FY 2006-07 is presented in Table 10.5 below:

Table 10. 5 Power Generation Projects to be implemented from July 2004- June 2007

SL.No	Generation Projects	Capacity (MW)	Expected commissioning date
	Public Sector: (under construction)		
1.	Siddhirganj 210 MW Thermal Power Plant	210	In operation
2	Barapukuria 2 X 125 MW Coal-based Thermal Power Plant	250	Nov.2005-Jan.2006
3	Tongi 80 MW Gas Turbine Power Plant	105	In operation
	New Projects:		
	Public Sector:		
4.	Sylhet 150 MW Combined Cycle Power Plant (100 MW CT)	100	2007
5.	Siddhirganj 120 MW Gas-Turbine Power Plant (including evacuation facilities)	120	2007
6.	Siddhirganj 2X 120 MW peaking Power	240	2007
7.	Chandpur 150 MW Combined Cycle Power Plant and Associated power Evacuation Facilities	100	2007
	Private Sector:		
8.	Baghabari (West Mont) Combined Cycle Power Plant 40 MW ST	40	Sep.2005
9.	Baghabari (West Mont) 130 MW Combined Cycle Power Plant	130	Sep.2005-March 2007
10.	Meghnaghat 450 MW CC (Unit-2)	300(GT)	Dec.2006-2007
11.	Small (IPP)	240	2007
	Mixed Sector/RPC:		
12.	Mymensingh (RPC) CC: 70 MW ST	70	Dec. 2005

Source: BPDB.

Power supply situation and steps taken for enhancement of the overall efficiency.

Reform Programmes undertaken

Government is committed to implement reform programmes for the enhancement of overall efficiency of power sector in the country. In fulfillment of this commitment, Government has taken up a number of reform programmes for the improvement of management efficiency in terms of power generation, transmission and distribution. Some of them have already been implemented. Within the remit of "Sector Unbundling and Corporatisation Plan" the following reforms have been carried out in the area of power generation, transmission and distribution:

- Ashuganj Power Station after being corporatised under Companies Act of 1994 has started functioning. All assets have been transferred from BPDB to this Company on 1 June 2003.
- As a move towards modern management Haripur Power Station has been brought under the program of Strategic Business Unit (SBU). Following successful operation of the unit, Bangladesh power station has also been converted into SBU. Gradually other power stations will also be converted into SBU.
- Electricity Generation Company of Bangladesh (EGCB) Ltd. has been established to operate the existing power plant and the 3x 120 MW power plant to be constructed at Siddhirgonj. It has been planned to appoint an internationally reputed O&M Contractor group to assist in the operational and maintenance functions of this company.
- As a consequence of the private participation in power generation, as of now 1290 MW electricity has been added to the total power generation capacity. Out of which 605 MW. over the last 3 years has been added. Besides, addition of another 1070 MW through private sector is in progress.

Transmission:

By December 2002, the process of transforming all assets from BPDB to Power Grid Company of Bangladesh (PGCB) has been completed. And the company has been developed into a sole transmission network operating in the country.

Distribution:

- As part of power sector reform and restructuring, West Zone Power Distribution Company (WZPDC) Ltd. has been established and it has started functioning from 1 October 2003.
- Corporatisation of the Northern Zone of BPDB is in progress.
- A plan has been taken up to corporatise south zone power distribution system of BPDB. In order to help in management function of the company, specialist consultant as Management Support Consultant will be appointed on contract basis. Depending on the success of this measure, similar steps will be adopted for other companies too.
- Government has decided in principle to corporatise DESA.

Table 10.6: Present Status of BPDB's Power Sector at a glance (up to June 2005)

Power Generation	
Installed Capacity	
(A) BPDB	3,735 MW
(B) IPP & Mixed Sector	1,290 MW
Total	**5,025 MW**
Maximum Demand Served	3,751 MW (23 June 2005)
Transmission	
Transmission Line	4,038 KM
Capacity of Grid S/S	
230/132 KV	4,150 MVA
132/33 KV	7,644 MVA
Distribution	
Distribution Line (33KV, 11KV and 0.4 KV)	2,42,832 KM
Total no. of Consumers	88.43 Lac
Total no. of Agriculture Consumers	1 Lac 78 Thousand
Total no. of Village Electrified	47,848
Access to Electricity	38%
Per-Capita Generation	158 KWh
System Loss (T&D)	23.8%

Source: Power Division. Ministry of Power, Energy and Mineral Resources

Converting BPDB into a Holding Company

As part of reforms process Government has decided in principle to convert BPDB into a holding company. In future, under this holding company, a number of generation and distribution companies and a transmission company will be operating as subsidiary companies. As the operating companies will be running commercially, their performance will improve due to competitive environment and the entities will become financially viable.

Establishment of Independent Energy Regulatory Commission

Energy Regulatory Commission Act was passed in Parliament in 2003 for establishment of an independent Energy Regulatory Commission (ERC). The Commission has been operational since April 2004 with the induction of its Chairman and the two Commissioners.

Pricing Policy

Government approved electricity pricing policy in May 2003 where policy guidelines have been incorporated for tariff rationalisation and gradual implementation of cost reflective tariff.

Renewable Energy Development

Draft of the renewable energy policy has been developed in order to inspire environment friendly power generation. Already BPDB and REB have taken initiative to supply power to the remote areas through Wind and Solar PVC.

Recent Development in Power Sector

Following reforms carried out by the Government, remarkable improvements have taken plan in the power sector.

Development Activities

The resultant improvement in the power sector due to reforms carried out over the last four years is that 915 MW has been added to the electricity generation capacity and distribution line has been extended to 66,653 Km. Number of consumers has increased from 55 lakh 30 thousand to 88 lakh 43 thousand. It means that during the last four years connection was given to more than 33 lakh new consumers, which is about 60 percent of the total consumers during the last four years. Number of agricultural consumers has also increased by about 68 thousand. Besides this, 12,050 new villages have been brought under electricity coverage, which is nearly 34 percent of the number of electrified villages in 4 years ago. A comparison of the improvement made over the last four years is presented below:

Table 10.7: Improvement in the Power Sector.

Description	*June 2001*	*June 2002*	*June 2003*	*June 2004*	*June 2005*	*Achievement during last 4 years*
Generation Capacity, MW	3115	3332	3750	3715	4030	915
Transmission Lines (230KV & 132KV),KM	3,738	3,750	3,859	3,918	4038	300
Distribution Lines (33KV & below),KM	176179	192140	2,09,932	227662	242832	66653
No. of Consumers (lakh)	55.30	63.33	70.64	79.20	88.43	33.13
No. of Agriculture Consumer (lakh)	1.10	1.21	1.35	1.54	1.78	0.68
No. of Village Electrified	35798	39028	41814	44630	47848	12050

Source: Power Division. Ministry of Power, Energy and Mineral Resources

Power Sector Development Master Plan (by 2020)

As per Reference Forecast of Power System Master Plan (1995), the maximum demand in 2007, 2012 and 2015 would be around 5368 MW, 7887 MW and 9906 MW respectively. The demand is expected to be 14600 MW in 2020. To meet in demand with reasonable reliability, a power development master plan has been developed. A summary of the master plan up to 2020 is shown below:

Table 10.8: Power Sector Development Master Plan (by 2020)

Item	Year				
	2004-05	**2006-07**	**2011-12**	**2013-20**	**Increase (new)**
Installed capacity, MW	4995	6411	9666	17765	14315
Peak Demand, MW	3751	5368	7887	14600	10849
Distribution Line, KM	44582	47329	52329	60329	15747
Nos. of Consumers, (Lakh)	18.90	20.50	24.50	32.50	13.60
Per Capita Generation, KWh	160	190	260	450	290
Distribution loss (%) without bulk	19.95	17.00	12.00	10.00	(-) 9.95%

Source: Power Division. Ministry of Power, Energy and Mineral Resources

Future Power Sector Reform Programmes:

Through a TA project titled "TA for Implementation of Bangladesh Power Sector Reform" under the Power Division, the Government has taken an initiative to carry out a detailed study for developing a comprehensive and co-coordinated reform implementation plan and determine the strategies to face the challenges to implement the plan. Government has taken steps to maintain dynamism in reform programs with the joint collaboration of organisation and newly formed companies for the implementation reform programs.

The long-term goals of the power sector reforms approved by the Government in principle are as follows:

- Ensure access to electricity for all citizens by the year 2020;
- Commercialise the power sector utilities to become financially viable;
- Establish a number of companies in generation and distribution sector and encourage private participation;
- Create competitive market through restructuring the existing market structure (multi-buyer/competitive pool);
- Enhance the efficiency of power sector in a competitive environment and ensure consumers right under the supervision of the Energy Regulatory Commission.

Financial Management in Power Sector

Government is committed to reach electricity services to all citizens by 2020. In order to achieve this goal according to plan necessary investment must be ensured. An investment worth Tk.23000 crore will be required in this capital-intensive sector to meet the demand up to 2007. It is also not possible on the part of the Government alone to provide required finance. As such the Government has to depend on commercial loans or foreign investment.

Currently power sector financing is managed by the following category of loans/credit from different sources:

- State Credit
- Concessional Loan
- Own financing by the Government
- Commercial Loan
- Ordinary Capital Resources (OCR)
- Supplier's Credit

Against the backdrop of declining bilateral and multilateral aid, there have been initiatives to make the financing procedure simpler and also to look for some alternative sources of financing. With this end view, a committee headed by the Principal Secretary of the Hon'ble Prime Minister was formed to formulate suitable recommendations. The recommendations of the committee have been approved by the Government. One of the recommendations is that suppliers' credit with acceptable conditions may be chosen only when financing from other sources is not possible and should be accepted on a transparent basis through international competitive bidding process.

Dhaka Electric Supply Company Ltd. (DESCO).

In order to lay greater emphasis on distribution management of electricity in the metropolitan city of Dhaka, to enhance reliability of electric supply, to improve customer service, to reduce system loss to a reasonable level, to augment revenue collection and above all to bring dynamism in the distribution system and to run it commercially Dhaka Electric Supply Company (DESCO) Ltd. was set up on 3rd November, 1996. Curently, DESCO is engaged in the business of electricity distribution in areas like greater Mirpur, Gulshan, Cantonment, Uttara, Baridhara, Dakshin Khan & Badda in Dhaka city covering an area of 165 Sq. Km. As part of its development activities, DESCO has constituted a monitoring cell for removal of illegal connections, prevention of pilferage of electricity and reduction in system losses in FY 2004-05. Besides actions like disconnecting illegal connections, filing suits against illegal electricity users, imposing penal bills, spot metering, metering in slum areas are being taken through a magistrate court. This has resulted in success in many areas of development. Table 10.9 and 10.10 reflect the key indicators of success during FY 1998-99 to FY 2004-05.

Table 10.9: Commercial Statistics of DESCO.

Description	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05 (June 05)
1	2	3	4	5	6	7	8
Energy Import(mkh)	344.80	546.71	627.56	673.09	855.79	1739.87	1842.87
Energy Import (million Tk.)	654.67	1041.60	1218.93	1354.51	1850.44	3775.52	3999.02
purchase rate (Tk./kwHr)	1.76	1.89	1.94	2.12	2.16	2.17	2.17
Energy Sales (in mkh)	204.78	369.20	440.17	493.62	675.57	1405.03	1535.38
System loss %	40.62	32.80	29.87	26.66	21.06	19.24	16.69
Energy Sales (Million Tk)	415.45	1066.76	1297.24	1470.03	2216.75	4902.32	5458.76
Sales rate (Tk./ KWHr.)	2.78	2.89	2.95	2.98	3.28	3.49	3.56
Bill collection (Million Tk.)	336.78	836.42	1041.80	1308.98	1642.67	4305.93	5279.56
Bill collection Ratio (%)	86.85	76.11	88.33	89.04	74.10	87.83	96.72
CI Ratio (%)	10.43	53.93	62.31	65.30	58.50	70.93	80.39
Number of Consumers*	77769	88623	97131	108182	205803	241964	259270
Liabilities to DESA (Million Tk.)*	415.45	545.12	739.11	834.71	1185.67	1184.58	467.22
Outstanding to the *consumers (Million Tk.)	231.66	462.00	717.45	878.50	1452.58	2048.97	3129.64
Disconnection illegal connection	-	-	-	25486	35276	36852	34975

Source: Dhaka Electric Supply Company Ltd. (DESCO).

*Data includes provisional figure for the month June, 2005.

Table 10.10: Infrastructure and Development of DESCO

Description	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Number of 33/11 KV substations	5	5	5	6	13	13	13
33/11 KV substation Installed Capacity	163/224	160/224	160/224	200/280	425/593	425/593	430/602
Highest demand (MW)	103.00	102.00	134.00	149.90	315.24	351.82	377.5
33 KV. Overhead Line (Km)	17.20	17.20	17.20	17.20	73.70	76.70	76.70
33 KV Under ground Line (Km)	17.20	37.80	37.80	37.80	70.30	125.30	130.30
11 KV. Overhead Line (Km)	156	156	162	169	536	552	600
11 KV Under ground Line (Km)	25	25	35	43	205	205	238
Distribution Transformer (T) Number	1305	1355	1455	1555	3369	3594	3625
LT Line (Km)	295	336	377	422	991	1030	1105
Sales Distribution & Division	02	02	02	02	02	06	06

Source: Dhaka Electric Supply Company Ltd. (DESCO).

Under the ongoing reform programmes in the Power Sector, the privatisation process is being accelerated. A process is continuing to include DESCO's share in the share market through issuance of pre- IPO/IPO in order to encourage private investment along with the Government investment. This process is likely to be completed by FY 2005-06.

In order to cope with the increasing demand for electricity and also to improve the quality of customers service DESCO is implementing a number of projects which include implementing 2 sub-station upgradation projects, a pilot project for establishing 5000 pre-paid metering facilities, a project for laying 25 km. underground cable and 150 km overhead line construction project. On the other hand, the installed capacity of DESCO sub-station has been enhanced to 450/630 MVA. Given that the constructions of 4 additional sub-stations with augmented capacity is completed by FY 2005-06, the installed capacity of DESCO sub-stations will enhance to 610/854 MVA. This will result in 5-7 percent growth at national level by 2007. Then it would be possible to supply electricity according to the increased demand.

Dhaka Electric Supply Authority (DESA)

In order to bring dynamism in the power sector DESA was created by separating from BPDB on March 06, 1990 by an Act of parliament. DESA formally commenced its operation on 1st October 1991. Since the establishment of DESA, the performance of electricity distribution system has improved remarkably. While the system loss before the creation of DESA was 38.26 percent it came down to 22.56 percent up to September 2004 during FY 2004-2005. System loss during pre-DESA and post DESA period is shown below in the table 10.11:

Table 10.11: Statement Showing Reduction of System Loss.

Financial year	System Loss (%)
Pre- DESA	38.26
1991-1992 (9 month)	35.55
1992-93	31.20
1993-94	31.33
1994-95	30.00
1995-96	29.47
1996-97	27.29
1997-98	27.89
1998-99	24.84
1999-00	25.72
2000-01	25.68
2001-02	25.05
2002-03	23.05
2003-04	26.21 *
2004-2005	22.56

Source: Dhaka Electricity Supply Authority.

* DESCO & REB are being billed directly by PDB since December 2003. In this case DESA sold electricity energy to those organisations at a zero system loss. As a result, the system loss of DESA has slightly increased.

Purchase of Electricity and Revenue Collection

In the first financial year of establishment of DESA (1991-92), the electricity purchase was 2260 MKWh. Gradually it increased to 6144.93 MKWh in FY 2003-04. In FY 2004-05 DESA purchased electricity to the tune of 4538.395 MKWh. During this time, the revenue collection from electricity supply has also increased remarkably. Before the establishment of DESA, the monthly average revenue collection was Tk. 35.56 crore, which increased to monthly average of Tk. 104.40 crore during FY 2004-05. Since December 2003, BPDB started billing directly to DESCO and REB instead of DESA. As a result, the scale of DESA's purchase went down. The year wise purchase of electricity and collection of revenue since the establishments of DESA till FY 2004-05, have been shown in Table 10.12:

Table 10.12: Purchase of Electricity and Revenue Collection 1991-92 to December 2004-05.

Financial year	Total Power Purchased (mkh.)	Revenue collection (Crore)
1991-92 (9 month)	2259.885	320.08
1992-93	3356.390	467.03
1993-94	3696.357	474.16
1994-95	4162.396	584.09
1995-96	4550.851	599.79
1996-97	4935.532	708.36
1997-98	5418.941	793.48
1998-99	5946.635	809.63
1999-2000	6504.047	1000.73
2000-2001	7240.456	1141.15
2001-2002	7833.191	1427.32
2002-2003	8306.179	1591.86
2003-2004	*6144.932	1514.96
2004-2005	4538.395	1253.70

Source: Dhaka Electric Supply Authority.

* DESCO and REB are billed directly by PDB since December, 2003.

Statement of Account Receivable and Payable

Every month DESA collects about 90 percent of bills claimed. Since the establishment of DESA, the cumulative amount of receivables up to June 2005 is Tk. 650.09 crore. Of the total receivables, the share of government organisation is Tk. 16.11 crore, semi-Government Tk. 74.17 and the rest amounting Tk. 408.52 crore remains in arrear with the private consumers. On the other hand, DESA owes a significant amount to BPDB on account of electricity bill. Year wise break-up of receivables and payables (liabilities) are shown in Table 10.13 below:

Table 10.13: The Account Receivable and Payable of DESA.

Financial year	Receivable (Crore Tk.)	Payable (Crore Tk.)
October,91	213.10	107.18
June,92	237.90	200.18
June,93	300.00	288.59
June,94	429.20	466.00
June,95	508.60	658.07
June,96	626.20	812.78
June,97	792.80	1022.33
June,98	998.10	1463.26
June,99	1244.19	2120.51
June,2000	1396.51	2616.21
June,01	1480.73	3058.30
June, 2002	1540.14	3430.33
June, 2003	1699.26	2923.20
June, 2004	1592.46	3086.49
June, 2005	650.09	3018.97

Source: Dhaka Electric Supply Authority.

The above table indicates that in FY 2004-05 DESA's receivable from consumers was Tk. 650.09 crore and payable to BPDB was Tk. 3018.97 crore.

Improvement of Power Supply System.

Project Implementation

To meet the increasing demand of electricity in Dhaka metropolitan city and greater Dhaka, the improvement of the electric supply system is essential. To achieve this goal, implementation of 4 projects are under way. Once these projects are completed, the electricity supply situation in Dhaka is likely to be improved remarkably.

The following projects have been included in the annual development program of FY 2004-05.

- Greater Dhaka Power Distribution Project, Phase-IV. 30 Kilometers 132 KV transmission line and three nos. of 132/33/11 KV Grid Substations will be constructed under this project.
- Three 132/33 KV grid substations (Moghbazar, Saidabad, Bashundhara) and six 33/11 KV Sub-Stations (Lalmatia, Green Road, Joarshahara, Madertek,Taltala, Uttara) have been constructed and commissioned under 9th Power Project financed by the Asian Development Bank (ADB). With the implementation of this project, is now possible to meet 375 MVA additional electricity demand.
- The construction work of three 132/33 KV grid substations (Shitalakha, Matuail, Uttara) have been constructed and commissioned under Chinese Suppliers' Credit. The development work of three 33/11 KV sub-stations (Char-Saidpur, BSISIC Narayangonj, Goran) is underway which is expected be completed by 2005.

- Under 10th Power Project the following substations and lines are being constructed on turnkey basis.
  - four 132/33 KV Grid Substation (Kamrangirchar, New Tongi, Narshingdi, Bhulta). - seven 33/11 KV sub-station (Tongi BSISIC Tongi-II, Tongi-III, Ullon Local, Bangshal, Nikunja, Sarulia).
  - 37 kilometers 132 KV line and 33 KV underground cable line.
  - 34 Kilometers 132 KV and 33KV overhead line.
- 132 KV Haripur-Ullon transmission line project-Construction of 20 Km. Transmission line.
- Emergency extension and rehabilitation of 2 X 50/75 MVA 132/33 KV Dhanmondi grid sub-station.
- Procurement of equipment and vehicle for 11 KV live line maintenance.

Improvement of the quality of consumer services

Sales and Distribution Divisions have been created by restructuring the Operation & Maintenance and Commercial Operation Divisions in order to improve the quality of consumer services. SBU (Strategic Business Unit) team is now functioning under the guidance of the Chairman, DESA and Consumer service desk has been introduced in each Sales and Distribution Divisions.

Steps taken to increase revenue collection

Line disconnection program is effectively going on to collect the outstanding dues. In addition, 4 (four) mobile magistrate courts are operating regularly. These activities are yielding good results implying that the outstanding dues are decreasing. It is expected that DESA will become a commercially viable organisation in the near future if this situation persists.

Power Sector Reforms

To improve the power system and the consumer service in the capital city and its adjacent areas, the original area of operation of DESA has been squeezed from 7200 sq. Km. to 3500 sq. Km. Besides, a company called DESCO has been created under the Company

Act by taking Mirpur, Gulshan, Baridhara, Uttarkhan & Dakhinkhan area of DESA. Reform program in this sector is going on. Recently, the Government has approved the Memorandum and Articles of Association of Dhaka Power Distribution Company Ltd. for rest of DESA to perform as company under Company act, 1994.

Performance Target Activities (PTA)

A group of officers and employees of each Sales and Distribution Division is being given responsibility to monitor import, sale and collection of a particular 11 KV feeder to establish transparency and accountability. PTA program has been introduced under a contract between each division and the Authority.

Rural Electrification Board (REB)

The vast majority of the population of Bangladesh lives in rural areas. Most of the people living in rural areas lack the basic amenities who can make significant contribution to the economic development of the country. Considering the importance of rural development, the Government has taken up rural electrification as one of its priority programmes for development. The rural people can improve the standard of their living by taking part in agricultural development, establishment of cottage industries, income-generating activities and make a great contribution to poverty alleviation in the country. Therefore, to ensure smooth supply and effective consumption of electricity for accelerating rural development, the Government established REB in 1977. With relentless efforts, REB achieved remarkable success in the realisation of its objectives and it is now recognised as a model both at national and international level. Up to June 2005, by constructing 192037 km distribution lines, REB has given a total of 6,122,669 connections in 43949 villages, of which 5172508 domestic, 162536 irrigation, 670542 commercial, 103024 industrial and 14059 others. The following table shows the physical target and achievement of REB during 1991-92 to 2004-2005:

Table - 10.14: Physical Target and Achievement

FY	Distribution Line (km)		No. of Consumers Connected	
	Target	Achievement	Target	Achievement
1991-92	2910	3528	94000	98632
1992-93	5115	5198	90900	89479
1993-94	5800	7280	109000	132158
1994-95	7260	8803	115000	243972
1995-96	9000	9749	140000	224355
1996-97	8440	10176	150000	262584
1997-98	10370	10467	300000	343870
1998-99	8325	9505	200000	373822
1999-00	10325	11408	300000	512445
2000-01	13750	12989	325000	504074
2001-02	14528	14641	350000	662641
2002-03	14922	16002	450000	650126
2003-04	14661	15706	550000	682283
2004-05	15400	16260	650000	727933
Total	140806	151712	3823900	5508374

Source : REB

On going projects under Rural Electrification Board (REB)

REB is an infrastructure development organisation of the Government. The financing of all activities of REB is therefore provided through the ADP. The Table 10.15 shows the actual expenditure of ADP against the allocation during FY 1991-92 to 2004-05:

Table - 10.15: Financial Target and Achievement

(In Lakh Taka)

FY	ADP Allocation			Actual Expenditure under ADP		
	Total	Taka	Project Aid	Total	Taka	Project Aid
1991-92	18700	7000	11700	14740.00	4415.00	10325.00
1992-93	33126	9293	23833	32155.00	9293.00	22862.00
1993-94	35822	20062	15760	35734.00	19980.00	15754.00
1994-95	50703	35953	14750	51150.00	35953.00	15197.00
1995-96	49200	29200	20000	50341.00	29200.00	21141.00
1996-97	62168	41906	20262	69703.00	41211.00	28492.00
1997-98	51443	32573	18870	52388.00	32570.00	19818.00
1998-99	50844	29679	21165	50192.00	29612.00	20580.00
1999-00	76015	45065	30950	74491.00	45036.00	29455.00
2000-01	69179	50666	18513	58454.00	49980.00	8474.00
2001-02	49055	31635	17420	55273.00	31602.00	23671.00
2002-03	81768	56612	25156	80822.00	56230.00	24592.00
2003-04	99943	58800	41143	100375.00	58251.00	42124.00
2004-05	113899	76493	37406	112893.62	74130.97	38762.65
Total	841865	524937	316928	838711.62	517463.97	321247.65

Source: REB

Under the ADP of FY 2004-2005, REB has been provided with an allocation of Tk 113899 lakh (of which Tk. 76493 lakh in local currency and Tk. 37406 lakh in project aid) for implementation of 19 projects (14 investment projects and 5 technical assistance projects). During this period, REB incurred a total expenditure of Tk.112893.62 lakh. The percentage of expenditure against ADP in local currency is 96.91 percent and in project aid 103.63 percent and the percentage of total expenditure against total allocation is 99.12 percent. Table 10.16 shows the physical targets and achievements of REB during FY 2004-2005.

Table 10.16: Physical Target and Achievement

Sl. No.	Component	Target of 2004-05	Achievement of 2004-05	Percentage of Estimated Achievement against Target
1.	Distribution line Construction (km.)	15400	16260	105.58%
2.	Sub-station Construction (nos.)	31	30	96.77%
3.	Consumer Connection (nos.)	650000	710263	109.27%
4.	Villages electrified (nos.)	2850	2824	99.08%

Source: Rural Electrification Board

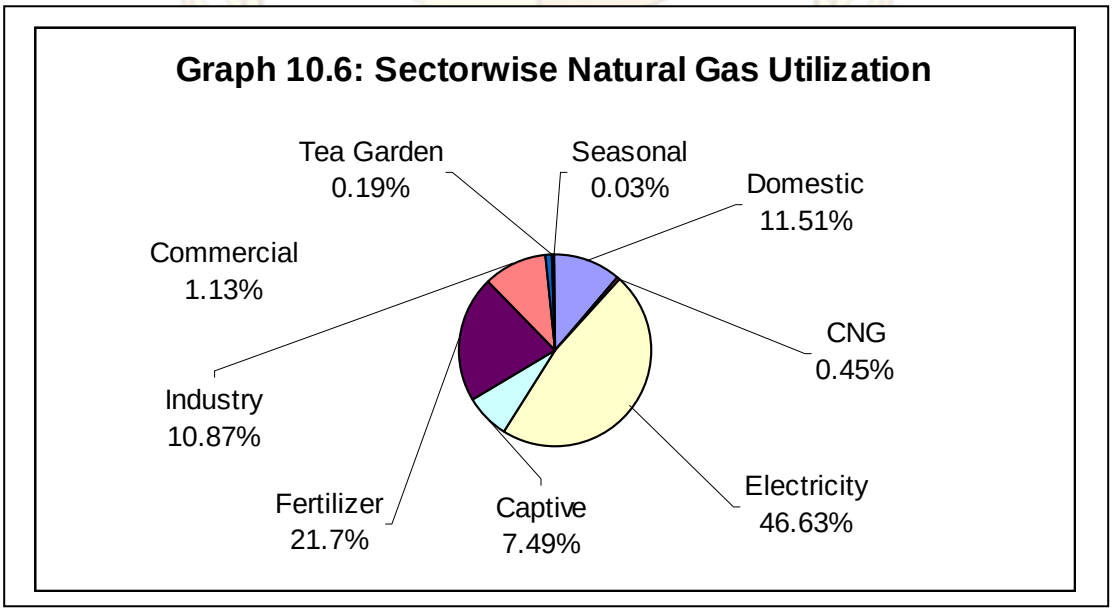
During the period from 1996-97 to 2000-2001; a total of 19,96,795 consumer connections has given through construction of 54,475 km line by REB. On the contrary during FY 2001-02 to FY

2004-05, 62609 km line has been constructed through which a total of 27,26,948 consumer connections have been given. REB has accelerated its development activities remarkably. Besides, in the remote areas where power cannot be distributed in conventional ways, REB has taken 2 renewable energy projects with a target of providing 22000 domestic connections through Solar Home Systems. Till to date as many as 1167 domestic connections have been given. REB purchases electricity from PDB and distributes to the consumers. Table 10.17 shows the statistics of purchase and sale of electricity by REB during FY 2004-05:

Table 10.17: Statistics of Purchase and Sale of Electricity among the Consumers by REB.

Year/month	MWH purchased	MWH sold/consumed						Avg System loss of 67 PBS (%)
		Domestic	Industry	Commercial	Agriculture	Others	Total	
2004-05								
July' 2004	605075	238209	225874	30215	5067	1080	500446	17.29
Aug' 2004	633634	257101	229540	31486	7205	1123	523454	16.91
Sept' 2004	576020	257934	212066	31953	3741	1101	506795	12.02
Oct' 2004	584206	233704	224827	29236	4185	1126	493080	15.60
Nov' 2004	525750	229635	192293	30533	7494	1087	461041	12.31
Dec' 2004	559598	206534	228564	26785	13578	1093	476554	14.84
Jan' 2005	625915	208332	210653	28330	90997	1106	539418	13.82
Feb' 2005	646359	202372	198070	27203	166980	1080	595705	7.84
Mar' 2005	694330	183190	239311	32117	145981	1194	601791	13.33
Apr' 2005	695254	218627	242048	31313	110899	1119	604006	13.12
May' 2005	636127	238397	268197	31061	16893	1167	555715	12.64
June'2005	616569	224912	224676	30021	52092	1116	532545	13.62

Source : REB



The Table 10.18 shows the payable amount of bill to PDB and receivable amount of bill from the consumer:

Table 10.18 : The Statistics of Receivable and Payable Amounts in Regard to Purchase and Sale of Electricity of REB.

Year	Accounts receivable (Months)	Accounts receivable (Taka,000)	Aging of Accounts Payable (PDB Bill Outstanding) (Taka,000)
1991-92	2.91	380137	0
1992-93	2.44	366248	3100
1993-94	2.10	379285	3697
1994-95	2.14	503615	6924
1995-96	2.10	556828	7199
1996-97	2.49	742639	7140
1997-98	2.46	912511	14659
1998-99	2.49	1271428	35706
1999-2000	2.30	1493264	148523
2000-2001	2.23	1864124	550383
2001-2002	2.21	2349959	427547
2002-2003	1.92	2687177	423410
2003-2004	1.81	3022224	324628
2004-2005	1.97 (Provisional)	4531175	3101000

Source: REB

Overall Rural Electrification Programme and Its Impact

Development & Expansion of Information Technology

Government has taken an initiative to conduct a feasibility study to set up Fiber Optic Network across the country by using the electricity transmission & distribution line. For this purpose a committee has been formed. In accordance with the recommendations of the committee an initiative has been taken to set up Fiber Optic Network by using the existing infrastructure of power sector institutions assigning PDB as the focal point through joint investment. So far, payroll software has been installed in 67 PBSs. Computerised systems to produce financial and statistical reports have already been established in 67 PBSs. In addition, computerised systems have already been introduced in goods inventory, billing systems of those PBSs. Graphic Information System (GIS) is being used in PBSs and by phases it will be introduced in all PBSs to develop the standard of consumers' services.

Institutional & Infrastructural Development

The implementation of project is closely linked with the establishment and development of existing PBSs meant for management and operation of power distribution system in rural areas. Inspired by the overall policy directions of the Government, PBSs are emerging mass-oriented and welfare institutions with the direct participation of rural people. The PBSs Dhaka-1, Comilla-1 & Narshindi-1 have launched private electricity generation plant under the control of REB. Plant-wise electricity generation capacity of the generation plants of those three PBSs is shown below:

Power Station	Generation Capacity (MW)
Ashulia, Dhaka	**1 · 11 = 11**
Chandina, Comilla	**1 · 11 = 11**
Madhabdi, Narshindi	**1 · 11 = 11**
Total	**= 33**

In addition, yearly Performance Target Agreement (PTA) is signed between PBSs and REB with a view to improving the system loss in an acceptable range including establishing an accountable system of operation and disciplined financial planning and its implementation. A continuous progress is being observed in various sectors of activities following introduction of PTA system. The rate of system loss in June 2004 was 15.60 percent, which has been reduced to13.62 percent by FY 2004-05. In addition, the average bill collection of the PBSs is now 98.06 percent. Efforts are continuing to sustain this achievement.

Socio-Economic Development

The agricultural and industrial production in rural areas has increased as nearly 60 percent of the total electricity supplied by REB is consumed in the productive sector of agriculture, commerce, and industry. REB is making one-third contribution towards achieving self-reliance in food production. REB is providing electricity connections to 14,731 irrigation sites covering 3.13 million acres of land and facilitating production of 5.6 million tons of boro and aman. This yield is 29 percent of total rice production. Out of total shops across the country, 24 percent are under Rural Electrification Programmes. Rural Electrification Programmes are also generating employment opportunities directly and indirectly with the development of cottage industries. The backward and poor rural community are getting employments, which in effect is improving their socio-economic condition. About 1.1 million employment opportunities have been created directly in the field of agriculture. By providing connections to 1,00,655 industries, 9,83,829 jobs have been created. The electricity connections in the retail and wholesale shops have also created 8,84,630 jobs. The savings of an electrified house is two times higher than a non-electrified house. The average statistics of this is Tk.28,893. The reason behind this is that the annual income of an electrified house of an electrified village is about Tk. 92,963, which is 65 percent higher than that of a non-electrified house of a non-electrified village. In accordance with the implementation scheme of REB, women participation is ensured in the PBS's organisational structure. Selection of a female advisor to the managing committee of a PBS and raising their proficiency through training is regarded a unique part of institutional development of this programme. In each and every PBS, in billing account, meter testing section and administrative section assistant posts are reserved for women. In addition, REB’s contribution to raising earnings and raising the standards of living by creating employment opportunities for women in cottage and other industries is recognised.

Fuel and Mining Sector

Abundance of energy and mineral resources plays a very significant role in the economic development of a country. Though Bangladesh is not rich in mineral resources, the country possesses natural gas of high quality, which is used as a source of energy in the industrial and commercial sectors. In addition, coal mine discovered at Bara Pukuria mine has added a new dimension to the energy sector. Currently, natural gas is meeting 70 percent of the commercial use of fuel. In the near future when use of coal is added; the pace of development of the country will be accelerated further. The reserve of natural gas in the 22 gas fields discovered so far across the country is estimated to be 28.41 trillion cubic feet (TCF) of the volume of extractable gas is 20.51 TCF. As of June 2004, the volume of net extractable gas deposit is 14.98 TCF. The volume of gas production on a cumulative basis was 5.546 TCF. The total gas reserve and extractable gas and cumulative production of gas up to June 2005 are shown in Table 10.19 below:

Table 10.19: Total Gas Reserve, Extractable Gas and Cumulative Production of Gas up to June 2005.

In Billion Cubic Feet (BCF)

Gas field	Total reserves (Proven + Probable)	Recoverable Reserve	Cumulative Production (upto June'05)	Remaining reserve (As on June 2005)
IN Production	1	2	3	4
Bakhrabad	1498.60	1,049.00	642.54	406.457
Habiganj	5139.00	3,852.30	1258.89	2593.406
Jalalabad	1195.00	836.50	261.43	575.071
Kailashtila	2720.10	1,903.30	343.00	1560.298
Meghna	170.60	119.60	34.19	85.407
Narshingdi	307.20	215.10	57.89	157.211
Rashidpur	2002.00	1,401.20	356.53	1044.674
Sylhet	683.90	478.70	175.66	303.036
Sangu *	1031.00	848.50	322.24	526.261
Saldanadi	165.80	116.10	40.95	75.148
Titas	7,325.00	5,127.50	2393.74	2733.758
Bianibazar	243.10	170.20	34.81	135.385
Fenchuganj	404.00	282.80	12.73	270.065
Feni	185.20	129.60	40.30	89.30
Moulavibazar	448.90	359.60	8.27	351.33
As yet undeveloped				
Begumganj	46.70	32.70	0.000	32.70
Kutubdia *	65.00	45.50	0.000	45.50
Semutang	227.00	150.30	0.000	150.30
Shahbajpur	664.30	465.60	0.000	465.60
Bibiyana	3,144.50	2400.80	0.000	2,400.80
Suspended				
Chhatak	677.00	473.90	25.80	448.10
Kamta	71.80	50.30	21.1	29.20
Total	**28,415.7**	**20,509.10**	**6036.90**	**14472.201**

Source: Energy and Mineral Resource Division

*** Offshore field.**

Presently 62 wells in 15 gas fields are in production. Included among them are: Titas (14 wells), Bakhrabad (4 wells) Habiganj (9 wells), Rashidpur (7 wells), Kailashtila (3 wells), Sylhet (2 wells) Narsingdi (1well), Meghna (1 well), Saldanadi (2 wells), Fenchuganj (2 wells), Sangu (6 wells), Jalalabad (4 wells), Moulvibazar (2 wells) Beanibazar (2 wells) and Feni (2 wells). After several years of suspension of production, Feni gas field, redeveloped under NIKO and BAPEX joint venture, has reserved production since 2-11-2004. The country had produced about 454.59 billion cubic feet (BCF) gas in the FY 2003-2004 while in FY 2004-05 gas production was 486.631 BCF (Provisional). Natural gas is the key energy source of Bangladesh. This gas is used for power generation, fertilizer production and commercial, industrial and domestic purposes. The following tables, 10.20 and 10.21 show year wise and sector wise consumption and demand of natural gas:

Table: 10.20: Sector-wise Consumption of Natural Gas

(Billion Cft)

Fiscal year	Production	Sector									Total Sales
		Power	Fertilizer	Industry	Captive Power	Tea estates	Brick Fields (Seasonal	Commercial	Domestic	CNG	
1990-91	172.84	82.60	54.20	13.20		0.70	0.00	2.90	10.50	-	164.10
1991-92	188.48	88.10	61.60	13.40		0.70	0.20	2.90	11.60	-	178.50
1992-93	210.98	93.30	69.20	15.20		0.70	0.20	2.40	13.50	-	194.50
1993-94	223.76	97.30	74.50	20.26		0.70	1.10	2.87	15.40	-	212.13
1994-95	247.38	107.40	80.50	24.24		0.60	1.10	2.88	18.86	-	235.58
1995-96	365.51	110.90	90.98	27.31		0.72	0.99	3.00	20.71	-	254.61
1996-97	260.99	110.82	77.83	28.62		0.71	0.48	4.49	22.84	-	245.79
1997-98	282.02	123.55	80.07	32.32		0.74	0.39	4.61	24.89	-	266.57
1998-99	307.48	140.82	82.71	35.79		0.71	0.35	4.71	27.02	-	292.11
1999-00	332.35	147.62	83.31	41.52		0.64	0.35	3.85	29.56	-	306.85
2000-01	372.16	175.27	88.43	47.99		0.65	0.44	4.06	31.85	-	348.69
2001-02	391.53	190.03	78.78	53.56		0.72	0.53	4.25	36.74	-	364.61
2002-03	421.16	190.54	95.89	63.76		0.74	0.52	4.56	44.80	0.23	401.04
2003-04	454.59	199.40	92.80	46.59	32.03	0.82	0.12	4.83	49.22	1.94	427.65
2004-05 (Provisional)	486.63	210.67	94.14	51.63	37.65	0.84	0.00	5.10	52.37	3.55	455.95

Source: Energy and Mineral Resource Division

Table: 10.21: Sector wise Demand for Natural Gas.

(Billion cft)

Sector	2003-04 (Actual)	2004-05 (Provisional)	2005-06	2006-07	2007-08
Power	199.40	210.67	233.60	247.80	268.30
Fertilizer	92.80	94.14	98.91	98.91	107.30
Domestic	49.22	52.37	59.45	65.41	72.00
Commercial	4.83	5.10	5.50	5.80	6.30
Industry	46.49	51.63	68.98	79.99	86.00
Captive power	32.03	37.65	42.48	46.97	53.40
Brick field	0.12	0.10	0.20	0.10	0.10
Tea estate	0.82	0.84	0.80	0.80	0.80
Brick Field	0.12	0.00	0.10	0.10`	0.10
CNG	1.94	3.55	4.50	5.20	5.60
System loss*	26.94	30.68	23.80	23.00	21.10
Total	**454.59**	**486.63**	**538.03**	**570.89**	**620.81**

Source: Energy and Mineral Resource Division

* Including own use.

Gas being the major source of energy for power generation, Urea fertilizer and other industries, commerce and domestic uses, it has become extremely important to explore new gas fields and develop discovered gas fields to meet the increasing demand of gas. To intensify and speed up hydrocarbon exploration activities the whole country has been divided into 23 acreage blocks. So far, 10 Production Sharing contracts (PSC) had been signed for 12 petroleum exploration blocks. Out of these, two PSCs have already expired. Currently, 8 PSCs are in force in 10 acreage blocks of Bangladesh. Relevant information are presented in Table 10.22 below:

Table10.22: The Agreement for Gas Exploration under Production Sharing Contract (PSC)

International Oil Company	Exploration	Area
Unocal Bangladesh Ltd.	Block 13,14	Sylhet, Moulavibazar
Unocal Bangladesh Ltd	Block 12	Sunamganj, Habiganj
Cairn Energy Sangu Field Limited/Halliburton Energy Incorporated	Block 16	Greater Chittagong Disricts, Kutubdia and areas adjacent to the Bay of Bengal
Tullow Bangladesh Ltd./ Rexwood/Okland	Block 17,18	Cox's Bazar, adjacent Bay of Bengal
Tullow Bangladesh Ltd./Niko Resources (Block-9)	Block 9	Gazipur,Narsingdi, Comilla and Chandpur Disrtics
Unocal Bangladesh Ltd./BAPEX	Block 7	Barisal,Patuakhali,Pirojpur, Jhalakati, Barguna Districts & adjacent Bay of Bengal.
Cairn Energy Exploration (Bangladesh) Limited/BAPEX	Block 5	Khulna,Shatkhira, Bagerhat Disrtics & adjacent Bay of Bengal.
Cairn Energy Exploration (Bangladesh) Limited/BAPEX	Block 10	Laksmipur, Noakhali,Bhola,Shahbajpur Districs & adjacent Bay of Bengal.

Source: Energy and Mineral Resource Division;

Meanwhile Cairn Energy has discovered an offshore gas field called Sangu in Block-16. Sangu gas field has been producing gas since 1998 under PSC and contributing considerably to our national gas supply grid. Unocal has discovered two gas fields at Moulavibazar and Bibiyana in blocks 14 and 12 respectively. The Moulavibazar gas field has started producing gas from April 2005. The implementation of development plan of Bibiyana gas field is in progress. Bibiyana field is expected to come under production by the end of 2006.

To meet the increasing demand for gas several projects are now being implemented. Among them Srikail Oil & Gas exploration well drilling project and Fenchuganj gas field development project funded by the Government have been completed in June 2005.Development of Shahbajpur gas field is underway. Construction of 30" dia 37 Km long project at Ashuganj-Monohordi GOB financed project and ADB funded 20" dia 60 km long Dhanua-Aminbazar gas transmission pipeline project are now under implementation. Expansion of gas transmission and distribution system in the western zone is also being carried out to meet future gas demand. As a part of this, Nalka-Bogra gas Transmission pipeline (24" dia 6 km + 20" dia 54 km) has been constructed very recently in order to supply gas to Bogra region.

LPG & CNG

LPG: LPG plant at Kailashtila is producing about 5000 tons LPG per annum from extracted NGL of Kailashtila gas field. Installation of NGL fractionation plant of 110 metric tons capacity by GOB fund is under implementation at Kailashitila to produce petroleum products like LPG, MS, HSD, Kerosene by fractionating NGL extracted from the wet gas fields i.e. Kailashtila, Beanibazar and Jalalabad and 2/3 NGL fractionation plants are expected to be established by the private sector also.

CNG: In order to prevent pollution conversion of petrol driven vehicle to Compressed Natural Gas (CNG) driven is being carried out and promotion of this mode of fuel is being encouraged. Besides public sector, Government has been encouraging private sector participation for installation of CNG re-fuelling stations. Efforts are continuing to convert more vehicles to CNG mode, and installation of more re-fuelling stations are being planned to ensure supply of CNG to the converted vehicles. Accordingly, Government has liberalised the conditions relating to importation of CNG conversion kits etc., so that private entrepreneurs could come forward at comfortably. Moreover, CNG driven buses are being imported from abroad. By using CNG in the vehicles, significant amount of foreign exchange has been saved and air pollution of Dhaka city has significantly decreased. The following data show the progress status of the initiative in place to introduce CNG across the country:

- Total CNG re-fuelling stations in operation: 100.

  (Dhaka-73, Gazipur-5, Savar-3, Chittagong-9, Comilla-2, Narayangonj-2, Sylhet-4 & Feni-2);
- New CNG re-fuelling stations to be operational by December, 2005: 11.
  (Dhaka-05, Ckhittagong-1, Gazipur-1, Sylhet-1 & Narayangonj-2);

- CNG conversion workshop in operation: 51
  (Dhaka-40, Chittagong-6, Sylhet-4 & Savar-1);
- No. Of CNG converted vehicles: 25632
  (Dhaka-24802, Chittagong-694 & Sylhet-136);
- Total CNG run vehicles in operation; 37138

Coal and Hardrock

In the mineral sector, implementation work of the Barapukuria coal mine and the Madhyapara hard rock mine have been completed in June 2005. The targeted production capacity of Barapukuria coalmine is 1 million metric tons per year. Out of this, about 7 lakh metric tons of coal will be used in the Barapukuria thermal power plant and particularly the brickfields, which will have an impact on reducing deforestation, will locally use remaining 3 lakh metric tons. The production capacity of hard rock mine is 1.65 million tons per year. The hard rocks will be mainly used in construction of roads and highways, railways and river training etc.

Fuel Demand and Supply System

Development and expansion of fuel reserve system, modernising and upgrading the fuel supply system conforming to international standard for international and domestic flights at Zia International Airport and replacement of the main distillation column of Eastern Refinery Ltd. the only petroleum refinery in the country, have been completed. Apart from these, emphasis has been laid on development and expansion of fuel reserve system throughout the country so that minimum 60 days' requirement can be met. Total fuel demand for 2002-03 was 33.99 lakh metric tons and total import was 35.46 lakh metric tons. Currently, total fuel stock capacity is 8.26 lakh metric tons. The following two tables present the information on import of refined and crude petroleum commodities by Bangladesh Petroleum Corporation (BPC) during 1990-91 to 2004-05 (up to November 2004):

Table 10.23: Import of Crude Petroleum Commodities (1991-2004)

Financial year	Quantity In Metric Ton	C & F Price In Million US Dollar	crore Tk.
1990-91	11,81,652	215.36	783.04
1991-92	10,17,764	147.63	570.40
1992-93	11,28,657	162.52	638.17
1993-94	12,39,038	149.94	599.20
1994-95	13,63,888	181.83	733.88
1995-96	11,40,334	153.42	639.23
1996-97	12,39,699	203.69	875.31
1997-98	11,44,048	151.56	714.10
1998-99	9,55,874	98.10	473.72
1999-2000	12,36,049	218.68	1110.96
2000-01	13,37,121	290.73	1598.60
2001-02	12,24,707	220.19	1277.78
2002-2003	13,31,003	289.30	1693.03
2003-04	12,52,424	314.12	1848.43
2004-05 (Provisional)	10,63,208	364.01	2261.98

Source: Bangladesh Petroleum Corporation (BPC)

Table 10.24: Import of Refinery Petroleum Commodities

(Quantity: Metric ton, price: crore Tk.)

Year	JP-1, Kerosene, Petrol, Bitumen, Diesel		Lubricating	
	Quantity	Value	Quantity	Value
1990-91	684441	688.99	26522	44.16
1991-92	805658	623.04	25771	34.99
1992-93	792131	607.81	28660	36.89
1993-94	916658	619.62	34274	45.15
1994-95	1114572	758.14	50262	81.09
1995-96	1466118	1125.07	39184	68.52
1996-97	1596567	1510.10	47638	64.98
1997-98	1734874	1275.04	39742	57.53
1998-99	2221872	1350.10	39961	45.62
1999-2000	1823400	2021.23	50229	86.41
2000-01	2068913	2999.20	29918	69.34
2001-02	2072300	2535.62	15316	30.59
2002-03	2213899	3319.35	1911	5.10
2003-04	2262348	4015.81	6516	18.38
2004-05 (Provisional)	2691750	7213.88	10189	38.14

Source: Bangladesh Petroleum Corporation (BPC)

BPC's Loss in Marketing Imported Finished Products and Refined Products of ex-ERL Processing

Bangladesh Petroleum Corporation (BPC) makes available different grades of finished POL products by procuring them from international market. BPC also procures crude oil for processing at ERL. Prices of both finished POL products and crude oil in the international market have considerably soared up in FY 2004-05 compared to that of FY 2003-04. Simultaneously US Dollar value vis-à-vis Taka has gone up. Upward price adjustment of POL products has been given affect in the local market during FY 2004-05. Also the rate of import duty has been reduced. But at the same time, tariff value has gone up. Because of a wide gap between total procurement cost per unit and domestic price (transfer price) of POL products, BPC faces larger amount of deficit (under recovery) in marketing imported finished products and refined products ex-ERL processing. On top of that, following chronic financial loss accumulated over the last few years, BPC is constrained to take recourse to borrowing from the IDB and NCBs for financing import of POL products, which is greatly contributing to be increase of its financing expenses. Depicted below is a picture of BPC's financial loss vis-à-vis contribution to national exchequer during the years 1999-2000 to 2004-2005:

Table 10.25: BPC's Profit/Loss and Contribution to National Exchequer

(In crore Taka)

Financial year	Profit/(Loss)	Contribution to National Exchequer
1999-2000	(1161.19)	2713.00
2000-2001	(1311.23)	2766.00
2001-2002	(780.21)	3033.00
2002-2003	(7.61)	2766.00
2003-2004	(943.00)	3087.00
2004-2005	(2733.00)	2451.00

Source: Bangladesh Petroleum Corporation (BPC)

During FY 2004-05, BPC sustains loss (under recovery) to the tune of about Tk. 2137.03 crores only from marketing imported POL products. During this year (2004-05), BPC's contribution to national exchequer has slightly fallen because of a little reduction in the rate of Import Duty compared to FY 2003-2004.

Geological Survey of Bangladesh (GSB)

GSB has been performing the responsibility of exploring, discovering, assessing the mineral resources of the country and conducting survey research in the field. GSB is implementing different development projects to strengthen exploration and evaluation of mineral resources in the country. As a result, coal has been discovered at Barapukaria Dighipara in Dinajpur district and at Khalashpir in Rangpur district. Besides this, glass sand, while clay and gravel deposits were discovered in different parts of the country. Apart from building efficient manpower of the organisation, its laboratory has been equipped with modern machinery. GSB is implementing a development project, "Geo-scientific activities for mineral exploration (2004-08)" at a cost of Tk. 350.00 lakh during the current financial year for exploration of mineral resources throughout the country. Nine programs will be implemented under this project. Out of them a hole (GDH-61/04) is being drilled currently at Dighipara coalfield at Dinajpur district to determine the coal reserve. The present depth of the hole is 181.40 meter. GSB discovered this coal basin in 1995. GSB has completed three drill holes in this basin to estimate coal reserve and its extension.

When the drilling of the fourth hole will be completed, it will be possible to determine stock of coal in the coal basin. Details of depth and thickness of layer of coal of the three holes are given below:

Table 10.26: Depth and Thickness of Layer of Coal

GDH-60	GDH-49	GDH-58
Layer-1: 355.1-365.00=9.9m	Layer-1: 327.96-345.03=17.07 m	Layer-1: 383.53-400.50=16.98 m
Layer-2: 368.80-402.79=33.99m	Layer-2: 348.39-382.22=33.83 m	Layer-2: 403.62-438.91=35.29 m
Layer-3 407.52-408.04=0.52 m	Layer-3: 384.66-391.66=7.00 m	Layer-3: 441.35-442.57=1.22 m
Layer-4: 416.36-419.25=2.89 m	Layer-4 395.94-398.37=2.43 m	Layer-4 444.79-455.07=10.28 m
	Layer-5: 400.50-401.88=1.38 m	
Total thickness 47.30 m	61.71	63.77 m

Source: Geological Survey of Bangladesh

At present, besides exploration of mineral resources in the country GSB is conducting studies in Arsenic Mitigation in sub-soil water and related issues in possible earthquake disaster. GSB presents its findings and comments on these issues in different workshops and seminar.

Energy Regulatory Commission.

For the long term development of Energy and Gas sector, Bangladesh Energy Regulatory Commission has been established as an independent and neutral body to create an atmosphere conducive to private investment in the generation of electricity, and transmission, transportation and marketing of gas resources and petroleum products, to assure transparency in the management, operation and tariff determination in this sector; to protect consumer's interest and to promote the creation of a competitive market. By inducting two members, the Commission started its function since the 27th April 2004. As per Bangladesh Energy Regulatory Commission Act, 2003, the Commission is vested with a wide array of responsibilities. Included among them are: issuance of licenses, fixing tariff in consultation with the Government, protecting consumer's interest and taking legal and necessary actions against the law violators. The Commission has already framed a set of regulations as per the mandate provided by the Bangladesh Energy Regulatory Commission Act 2003. Recently the USAID and the World Bank have come forward to provide technical assistance to the Commission to further strengthening its capacity.