CHAPTER 10

POWER AND ENERGY

Power is a critical input to the development process of a country. One of the pre-conditions for development is, therefore, generation, transmission and distribution of power according to demand and its planned and appropriate use. There is a huge demand for electricity in our day-to-day life as well as in Industry, Agriculture and Service sectors. Against the backdrop of expansion of electricity use in rural areas in 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 economic development including the development of agriculture and industry. As a result, the standard of living is improving and people are rising gradually above the poverty line.

Presently, only 48.5 percent of the total population has access to electricity and per capita generation is only 200 kwh, which is very low compared to other developing countries. Government has given the highest priority to power sector development and is committed to make electricity available to all by 2021.

Contribution of electricity to GDP and growth rate of electricity during the last 8 years are presented below:

Table-10.1: Contribution of Electricity in GDP and its Growth Rate

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10 (provisional)
Contribution of electricity in GDP (%)	1.30	1.34	1.37	1.38	1.30	1.31	1.31	1.32
Growth rate of electricity (%)	7.29	9.19	8.58	7.45	1.08	6.68	5.39	6.93

Source: Bangladesh Bureau of Statistics

Present Power Generation Scenario

Consumption of power accelerates social and economic development. However, currently consumers cannot be provided uninterrupted and regular power supply due to inadequate generation. The Government has given top priority to the development of the sector considering its importance in overall development of the country. To resolve the present power crisis and to meet the increasing demand of electricity, the government has taken initiatives to add up 11,456MW to the national grid by 2015. Year wise power generation plan is shown in Table 10:11:

Table-10.1.1 Year Wise Power Generation Plan from 2010 to 2015

In MW)

YEAR	2010 (Sep-Dec.)	2011	2012	2013	2014	2015	Total
Public		1051	895	1150	720	450	4266
Private	215	100	1192	850	950	2600	5907
Quick Rental	250	1033					1283
Total	465	2184	2137	2000	1670	3050	11456

Source: Power Division

Transmission and Distribution

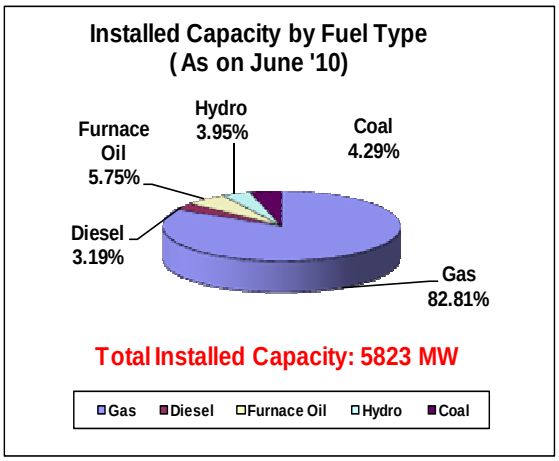
In addition to power generation, it is very important to develop a dependable and quality power transmission and distribution network to ensure regular and uninterrupted power supply to the consumers. To transmit the newly produced power to the doorsteps of the consumers, it is urgently needed to build new transmission and distribution infrastructure in addition to renovation and preservation of existing distribution networks.

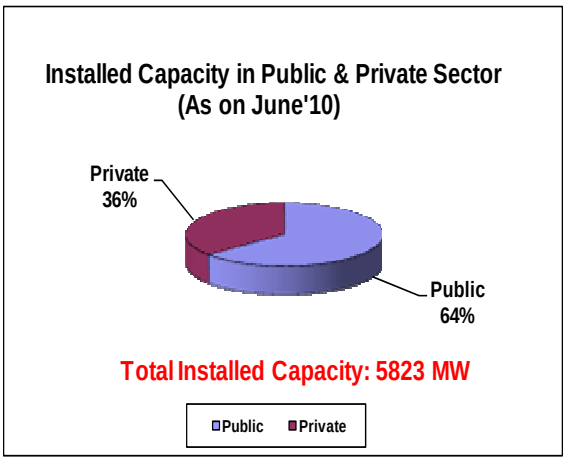
Up to June 2010, a total of 8,322 circuit kilometer transmission lines and about 2,70,000 kilometer of distribution lines with necessary infrastructure were energized. To evacuate power from new power plants about 3,500 circuit kilometer transmission lines and about 60,000 kilometer distribution lines will need to be constructed by 2015.

Bangladesh Power Development Board (BPDB)

Generation Capacity and Demand

In FY 2009-10, total installed generation capacity was 5,823 MW, of which 3,719 MW in public sector and the remaining 2,104 MW in private sector (including REB). In the public sector, a good number of generation units have become very old and have been operating at a much-reduced capacity. As a result, their reliability and productivity are also poor. For the last few years, actual demand could not be met due to shortfall in available generation capacity. Besides, due to shortage of gas supply some power plants are unable to reach their generation capability. Maximum actual generation was 4,606 MW on 30th June 2010. The installed capacity by fuel type and in Public/Private sector for FY 2009-10 are shown in chart below.

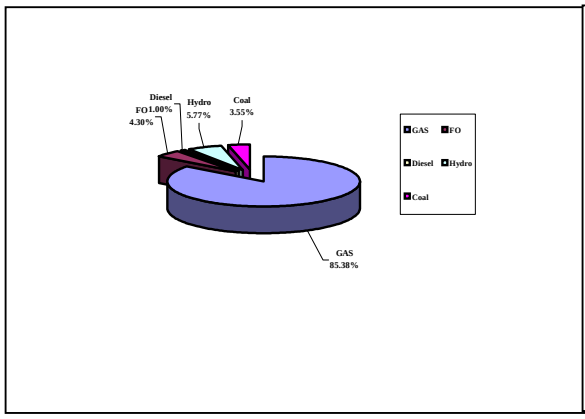


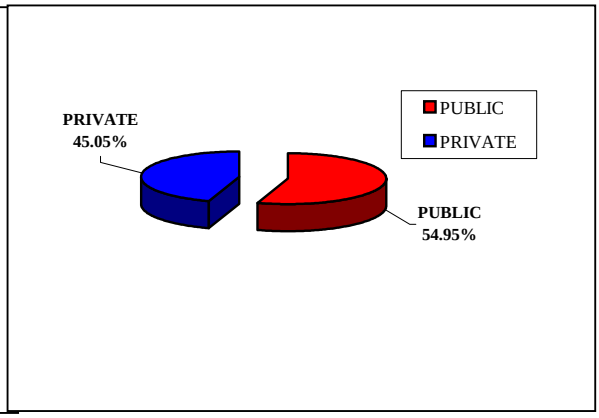


Energy Generation

A total of 29,247 Million-kilowatt hour (MkWh) net energy (including REB) (16,072 MkWh in public sector and 13,175 MkWh in private sector) was generated during FY 2009-10. Public sector power plant generated 55 percent of the total net generation and the remaining 45 percent by private sector. The share of gas, hydro, coal and oil based energy generation were 89.22 percent, 2.49 percent, 3.52 percent and 4.77 percent respectively. In FY 2008-09, a total of 26,533 million-kilowatt hour

(MKWh) of energy was generated. Energy growth in FY 2009-10 was 10.23 percent. Net energy generation is shown in the charts below.





Natural gas consumption in BPDB's power plants was 1,06,593 million cubic feet in FY 1995-96, which was increased to 1,66,557 million cubic feet in FY 2009-10. The consumption of natural gas and liquid fuel since FY1995-96 is shown in Table 10.2

Table 10.2: Fuel Consumption by BPDB Power Plant

Fiscal Year	Natural gas (Million cft)	Liquid fuel (million liter)	
		Furnace Oil	HSD, SKO & LDO
1999-00	1,41,330	114	92
2000-01	1,51,312	95	77
2001-02	1,51,577	85	55
2002-03	1,31,180	128	62
2003-04	1,34,482	174	95
2004-05	1,41,021	186	130
2005-06	1,53,920	171	125
2006-07	1,46,262	93	99
2007-08	1,50,992	137	111
2008-09	1,61,008	90	113
2009-10	1,66,557	10	125

Source: Bangladesh power Development Board.

Maximum Generation

Actual demand could not be met for the last few years due to shortfall in generation capacity though recently the installed capacity has increased slightly. Maximum generation was 2,087 MW in 1995-1996. The maximum generation was increased to 4,162 MW in 2008-09. In the FY 2009-10 maximum generations was 4,606 MW. The installed capacity and maximum generation since FY1995-96 are shown in Table 10.3.

Table-10.3: Installed Capacity and Maximum Generation

Fiscal Year	Installed capacity (MW)	Maximum generation (MW)
1999-00	3711	2665
2000-01	4005	3033
2001-02	4230	3218
2002-03	4710	3458
2003-04	4710	3622
2004-05	5025	3751
2005-06	5275	3812
2006-07	5262	3718
2007-08	5262	4130
2008-09	5719	4162
2009-10	5823	4606

Source: Bangladesh power Development Board.

Power Generation Programme

The Government has been preparing Power System Master Plan 2010 to realize the goal to provide electricity for all. According to the initial findings of Power System Master Plan 2010 study, the maximum demand including captive power in 2015, 2021 and 2030 would be about 12,000, 20,000 and 36,000 MW respectively. To meet the demand with reasonable reliability, installed capacity will be enhanced to 23,000 MW and 37,000 MW by the year 2021 and 2030 respectively. To meet this demand for electricity, short, medium and long term generation, distribution and transmission lines expansion projects are in various stages of implementation. According to the existing generation expansion programme, a total of 11,456 MW of fresh electricity will be added to the national grid by the end of FY 2015. Present status of the existing generation programmes is given in Table 10.4

Table-10.4: Power Generation Projects up to 2015 (Under existing Plan)

Sl. No	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
Public Sector (Under Construction):				
01.	Siddhirganj 2X120 MW Peaking Power Plant (1st unit)	105	EGCB	July,2011
02.	Fenchuganj 90 MW CCPP	105	BPDB	March,2011
03.	Faridpur 50 MW Peaking Power Plant	54	BPDB	August, 2011
04.	Gopalganj 100 MW Peaking Power Plant	109	BPDB	August, 2011
05.	Dohazari 100 MW Peaking Power Plant	102	BPDB	September, 2011
06.	Hathazari 100 MW Peaking Power Plant	98	BPDB	September, 2011
07.	Bera 70 MW Peaking Power Plant	71	BPDB	October, 2011
08.	Doudkandi 50 MW Peaking Power Plant	52	BPDB	September, 2011
09.	Baghabari 50 MW Peaking Power Plant	52	BPDB	September, 2011
10.	Katakhali 50 MW Peaking Power Plant	50	BPDB	December,2011
11.	Santahar 50 MW Peaking Power Plant	50	BPDB	December,2011
12.	*Ashuganj* 50 MW Power Plant	53	APSCL	March, 2011
13.	Sylhet 150 MW CCPP	150	BPDB	October, 2011
14.	Chandpur 150 MW CC PP	150	BPDB	March, 2012
Sub-Total (Public)		1201		
Private Sector				
01.	Bheramara 3 Years Rental	110	Rental (BPDB)	October, 2010
02.	Noapara, Jessore, 5 Years Rental	105	Rental (BPDB)	November, 2010
03.	Barisal, 5 Years Rental	50	Rental (BPDB)	December, 2010
04.	Siddirganj; Sponsor: Desh Energy	100	Rental (BPDB)	October 30, 2010
05.	Pagla, Narayaganj; Sponsor: DPAPGL	50	Rental (BPDB)	November 12, 2010
06.	Modanganj; Sponsor: Summit Power	102	Rental (BPDB)	March 20, 2011
07.	Meghnagat; Sponsor: IEL	100	Rental (BPDB)	March 27, 2011
08.	*Khulna*; Sponsor: KPCL	115	Rental (BPDB)	March 20, 2011
09.	Meghnagat; Sponsor: HPGL	100	Rental (BPDB)	January, 2011
10.	Nowapara; Sponsor:KhanJahan Ali	40	Rental (BPDB)	April 21, 2011
11.	Keranigonj; Sponsor: Power Pack	100	Rental (BPDB)	March 31, 2011
12.	Chapai Nawabgonj; Sponsor: Sinha Power	50	Rental (BPDB)	March 31, 2011
13.	Julda, Karnafuli; Sponsor: Acorn Infra. Service Ltd	100	Rental (BPDB)	April 02, 2011
14.	Siddirganj; Sponsor: Dutch Bangla Power	100	Rental (BPDB)	March 31, 2011
15.	Katakhali; Sponsor: NPSL	50	Rental (BPDB)	March 31, 2011
16.	Shikalbaha; Sponsor: DJ Wever	198	Rental (BPDB)	120 Days from Contract Signing.
17.	Ghorashal; Sponsor: Max Powr	78	Rental (BPDB)	120 Days from Contract Signing.
18.	Gazipur	50	RPCL	January, 2012
Sub-Total (Private)		1598		
Total (under construction)		2799		
Under Procurement Process				
Public Sector				
01.	Ghorasal 200-300 MW Peaking	290	BPDB	June, 2012
02.	*Khulna* 150 MW GT	150	NWPGC	June, 2012
03.	Sirajganj 150 MW GT	150	NWPGC	June, 2012
04.	BPDB-RPCL JV Peaking pp	150	PDB & RPCL	June 2012
05.	Siddirganj 450 MW CCPP	450	EGCB	June, 2013
06.	Bhola 150 MW CCPP	150	BPDB	June, 2013
07.	Barapukuria 250-300 MW (3rd Unit)	250	BPDB	December, 2013
08.	*Ashuganj* 150 CCPP	150	APSCL	December, 2013
09.	Shikalbaha 150-225 MW CCPP	150	BPDB	December, 2013
10.	Haripur 360 MW CCPP	360	EGCB	June, 2014
11.	Bheramara 360 MW CCPP	360	NWPGC	June, 2014
12.	*Ashuganj* 450 MW CCPP	450	APSCL	March, 2015

Sl. No	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
Sub-total (Public)		3060		
Private Sector				
01.	Raujan	20	RPCL	June 2012
02.	Shantahar Peaking Plant	50	IPP (BPDB)	April, 2012
03.	Syedpur Peaking Plant	100	IPP (BPDB)	April, 2012
04.	Jamalpur Peaking	100	IPP (BPDB)	May, 2012
05.	Chapai Nababganj	100	IPP (BPDB)	May, 2012
06.	Comilla Peaking	50	IPP (BPDB)	May, 2012
07.	*Khulna* Peaking	100	IPP (BPDB)	May, 2012
08.	Tangail 20 MW	20	IPP(REB)	June, 2012
09.	Chandpur 15 MW	15	IPP (REB)	June 2012
10.	Narayangonj	30	IPP (REB)	June 2012
11.	Bhola 150-225 MW CCPP (2nd unit):SC GT Unit	100	IPP	December, 2012
12.	Keraniganj 150-225 MW CCPP :SC GT Unit	100	IPP	December, 2012
13.	Madanganj 150-225 MW CCPP :SC GT Unit	100	IPP	December, 2012
14.	Bibiyana 300-450 MW CCPP (1st Unit): SC GT Unit	200	IPP	December, 2012
15.	Savar Peaking Plant, Dhaka	100	IPP	January, 2013
16.	Kaliakair Peaking Plant, Gazipur	100	IPP	January, 2013
17.	Bibiana 300-450 MW CCPP (2nd Unit): SC GT Unit	200	IPP	January, 2013
18.	Meghnaghat 300-450 MW CCPP (2nd Unit) Duel Fuel: SC GT Unit	200	IPP	January, 2013
19.	Bibiana 300-450 MW CCPP (1st Unit): ST Unit	100	IPP	August, 2013
20.	Bhola 150-225 MW CCPP (2nd unit): ST Unit	50	IPP	December, 2013
21.	Keraniganj 150-225 MW CCPP : ST Unit	50	IPP	December, 2013
22.	Madanganj 150-225 MW CCPP :ST Unit	50	IPP	December, 2013
23.	Bibiana 300-450 MW CCPP (2nd Unit): ST Unit	100	IPP	January, 2014
24.	Meghnaghat 300-450 MW CCPP (2nd Unit) : ST Unit	100	IPP	January, 2014
25.	Sirajganj 300-450 MW CCPP	300	IPP	June, 2014
26.	Dhaka North	450	RPCL	June, 2014
27.	Chittagong	1300	PPP (Joint Vent.)/ IPP	June, 2015
28.	*Khulna* South	1300	PPP (Joint Vent.)/ IPP	June, 2015
Sub-Total (Private)		5485		
Total (under process)		8545		
Gross Total		11,344		
Solar & wind Power Projects				
01.	Kaptai Solar	5	BPDB	June 2012
02.	Solar	7	IPP (BPDB)	January, 2012
03.	Wind	100	IPP (BPDB)	June, 2012
Sub-total		112		
Grand Total		11,456		

Source: Power Division

Transmission System

Power Grid Company of Bangladesh (PGCB)

Before the formation of Power Grid Company of Bangladesh Ltd. (PGCB), Bangladesh Power Development Board (BPDB) was responsible for operation, maintenance and development of transmission system all over Bangladesh alongside the generation and distribution of power. PGCB had its inception on 21st November, 1996 as a fully Govt. owned company with an authorized capital of Tk.10 billion under the Power Sector Reform Programme of the Government. PGCB is functioning

under the Companies Act, 1994. The Government has decided to offload 25 percent of its shares i.e. a total of 91,08,940 shares (Tk.100 each) through the Stock Exchanges under Direct Listing in order to bring more accountability in the company's activities and to strengthen the capital market of the country. Accordingly, PGCB was listed in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) in October' 2006 and trading of shares began and 86,53,490 shares were sold. It is to be noticed that, BPDB owns 76.25 percent shares of PGCB.

Power generated in different power plants all over the country is transmitted to the national grid through 230 kV and 132 kV transmission lines. In 1996 when PGCB was formed, the total length of 230 kV and 132 kV lines was 838 ckt km and 4,55 ckt km respectively. At present the length of 230 kV and 132 kV transmission lines is 2,44.5 ckt km and 5,77 ckt km respectively. The total length of the OPGW installed in the transmission line from 1996 to June, 2007 was 2200 km. This has been increased to 4,00 km until June, 2010 when the NLDC project was completed. Therefore, the major parts of the country are covered by the PGCB optical fiber network.

Power Grid Company of Bangladesh Ltd. has the responsibility to operate, maintain and develop the power transmission system in the country. To improve the whole transmission system, the company has completed the following transmission facilities:

(1) Comilla-Meghnaghat-Haripur 230 kV Transmission Line.
(2) Turn in and out of existing Ghorasal-Haripur 230 kV Line at Rampura.
(3) Hasnabad-Aminbazar (Savar)-Tongi and Haripur-Meghnaghat 230 kV Transmission Line.
(4) Rampura-Gulshan 132 kV Double ckt Cable Line.
(5) *Khulna* Central-*Khulna* South Double ckt 132 kV Transmission Line.
(6) *Khulna* 230/132 kV Substation.
(7) Barapukuria 230/132 kV Substation.
(8) Extension of Joydebpur 132/33 kV Substation with GIS Bay.
(9) Natore-Rajshahi 132 kV Single Circuit Transmission Line with PGCB's own financing.
(10) Barapukuria-Rangpur and Barapukuria-Saidpur 132 kV Transmission Line.
(11) *Ashuganj*-Sirajganj 230 kV line & Sirajganj switching station.
(12) Construction of Joydevpur-Kabirpur-Tangail 132 kV double circuit Transmission Line.
(13) *Khulna*-Ishurdi & Bogra-Barapukuria 230 kV double circuit Transmission Line.
(14) Bogra 230/132 kV S/S.
(15) Third 230/132 kV Transformer (225 MVA) each at Haripur, Aminbazar & Rampura.
(16) Serajganj-Bogra 230 kV Transmission Line.
(17) Sirajganj-Baghabari-Ishurdi 230 kV Line.
(18) Baghabari 230/132 kV S/S.
(19) Gallamari 132/33 kV GIS S/S.
(20) Naogaon-Niamatpur 132 kV Transmission Line.
(21) Niamatpur 132/33 kV S/S.
(22) Shahjibazar-*Ashuganj* 132 kV Transmission Line.

(23) Installation of 450 MVAR Capacitor Banks at 132 level in eight S/Ss.

(24) Aminbazar-Savar 132 kV Transmission Line.

(25) Savar 132/33 kV S/S.

(26) Magura 132/33 kV S/S.

(27) Jhenaidah-Magura 132 kV Transmission Line.

The Government has already undertaken a massive plan to strengthen the transmission system and fulfill the future demand of electricity with the aim of providing electricity to all by 2021. As part of achieving the target, the following projects are under implementation:

Table 10.5 Projects Under Implementation

Sl No.	Name of the Project	Physical Target up to June-10	Physical Progress up to June-10	Financing Status
1	National Load Despatch Centre(NLDC) Implementation Period: 2003-04 to 2009-10	100%	99.92%	ADB & Bangladesh Govt.
4	Construction and Extension of Grid Substations including Transmission line facilities (Phase-1). Implementation Period : 2005-06 to 2009-10	65.74%	65.46%	ADB, JBIC & Bangladesh Govt.
5	Three Transmission Line. Implementation Period : 2006-07 to 2009-010	90.00%	89.80%	ADB & Bangladesh Govt.
6	Meghnaghat-Aminbazar 400 kV Transmission Line (Phase-1). Implementation Period: 2006-07 to 2009-10	18.76%	17.021%	ADB & Bangladesh Govt.
7	Aminbazar-Old Airport 230 kV Transmission Line and Associated Sub-Stations. Implementation Period : 2006-07 to 2009-10	33.30%	33.80%	ADB & Bangladesh Govt.
8	Transmission Efficiency improvement through Reactive Power Compensation at Grid Substations and Reinforcement of Goalpara Substation. 2007-08 to 2009-010	15.75%	15.75%	kfW & Bangladesh Govt.
9	Siddhirganj-Maniknagar 230 kV Transmission line with associated substations. August, 2009-Dec, 2011	2.05%	9.64%	ADB & Bangladesh Govt.
10	Shunt Compensation at Grid Substations by Capacitor Banks (Phase-1). Implementation Period: 2005-06 to 2009-10	100.00%	100.00%	ADB & Bangladesh Govt.
11.	Aminbazar-Savar 132 kV Transmission Line. Implementation period: 2008-09 to 2009-10	100.00%	100.00%	Dhaka PBS-1

The following projects are in active consideration of PGCB under the Prioritized Investment Plan of the Government:

(1) Bibiyana-Comilla(N) 230 kV Transmission line

(2) Bibiyana-Kaliakoir 400 kV and Fenchuganj-Bibiyana 230 kV Transmission Line

(3) Aminbazar-Maowa-Mongla 400kV & Mongla-*Khulna*(S) 230 kV Transmission Line

(4) Anowara-Meghnaghat 400 kV Transmission Line.

(5) Grid Interconnection between Bangladesh (Bheramara) and India (Baharampur)

(6) Goalpara-Bagerhat 132 kV 2nd Single Circuit Transmission line

(7) Barisal-Bhola- Burhanuddin 230 kV Transmission Line

(8) Eight new 132/33 kV S/Ss with Interconnecting 132 kV line.

(9) Ishurdi-Rajshahi 230 kV Transmission Line.

(10) Construction of 230/132 kV Substations at Shyampur, Jhenaidaah (Or Jessore), Bheramara and Sripur

(11) Chandraghona-Rangamati-Khagrachari 132 kV Transmission Line

(12) Enhencement of Capacity of Grid Substations and Transmission Line (Phase-I)

(13) Raojan-Sikalbaha- Anowara & Hathazari-Khulshi 230 kV Transmission Line

(14) RPCL Mymensingh-Tangail via Bhaluka 132 kV double circuit Transmission Line

(15) Brahmanbaria-Nabinagar-Narsingdi 132 kV Double Circuit Pole Line

(16) Electricity interconnection between Tripura and Eastern Region of Bangladesh.

Distribution System

Bangladesh Power Development Board (BPDB)

Distribution System comprises of 33 kV, 11 kV and 0.4 kV lines. In 1995-96, the total distribution lines in the BPDB system was 35,962 km, which has decreased to about 29,601 km in FY 2009-10 due to the transfer of some distribution lines to REB & WZPDCL. The number of consumers has also increased to 20, 67,154 in FY 2009-10 from 11, 56, 672 in FY 1995-96.

System Loss

BPDB is committed to bringing down the system loss to an acceptable limit. Various measures are underway to reduce the distribution system loss. In FY 2008-09, the distribution loss was 13.57 percent. The distribution loss in BPDB system came down to 13.06 percent in 2009-10. Year wise distribution system loss since FY1995-96 is given in Table10.6 below:

Table-10.6: Distribution System Loss of BPDB

Fiscal Year/ Month	Distribution loss (%)
1999-00	27.73
2000-01	26.11
2001-02	24.50
2002-03	22.35
2003-04	21.33
2004-05	20.00
2005-06	19.06
2006-07	16.58
2007-08	14.43
2008-09	13.57
2009-10	13.06

Source: Power Division

Accounts Receivable

Accounts receivable is a major problem of BPDB. In FY 2009-10 accounts receivables by BPDB was about at Tk. 40,101 million. In FY 2008-2009 it was about at Tk. 38,534 million. Accounts receivables by BPDB during 1999-2000 to FY 2009-10 are shown in Table 10.7.

Table -10.7: Accounts Receivable of BPDB

In Million Taka

Fiscal Year / Month	Accounts receivable (Including Bulk)
1999-00	27892.20
2000-01	33549.90
2001-02	36717.40
2002-03	39938.00
2003-04	43681.00
2004-05	41557.00
2005-06	42711.00
2006-07	37523.00
2007-08	39196.00
2008-09	38534.00
2009-10	40101.00

Source: Directorate of System Planning, BPDB, Power Division.

Rural Electrification Board (REB)

Rural electrification program has shown a remarkable progress since its inception and now it is recognized as a national as well as an international model. Rural Electrification Board, through its 70 PBSs across the country, has given a total of 81,02,549 connections in 48,682.villages of which 69,85,344 are domestic, 1,77,669 for irrigation, 7,94,896 commercial, 1,30,965 industrial and 13,675 are other type of connections. During this period, it constructed 2, 22,780 km of distribution lines. The following table shows the targets and achievements made in Rural Electrification Programme during FY 2000-01 to FY 2009-10:

Table -10.8: Physical Target and Achievement of REB

Fiscal Year	Distribution Line (km)			No. of Consumers Connected		
	Target	Achievement	Variance (-) / (+)	Target	Achievement	Variance (-) / (+)
2000-01	11435	12989		325000	504074	
2001-02	14528	14641	1652	350000	662641	158567
2002-03	14922	16002	1361	450000	650126	-12515
2003-04	14661	15706	-296	550000	686248	36122
2004-05	15400	16260	554	650000	735081	48833
2005-06	14500	15091	-1169	750000	741095	6014
2006-07	5476	4764	-10327	650000	453426	-287669
2007-08	5042	3089	-1675	245000	192883	-260543
2008-09	6116	5062	1973	368275	405990	213107
2009-10	2852	2713	-2349	420000	461417	55427
Total	104932	106317		4758275	5492981	

Source: REB

[Variance = Current year Achievement – Previous year Achievement]

It is to be noted that, as per government decision, construction of new transmission lines and new connections to consumers of various categories were suspended from 30-11-2006 to 08-11-2007. As a result, the target of line construction and consumer connection in FY 2006-07 and 2007-08 could not be achieved. In addition to that, a huge number of consumer connections were terminated for various reasons and therefore, only existing number of consumers is included in the statistics. For this reason, the total number of consumers decreased in FY 2007-08.

On going projects under Rural Electrification Board (REB)

REB is an infrastructure developing organisation of the Government. The Government provides financing for all the activities of REB through the ADP.

Under the framework of RADP of FY 2009-10, REB has been provided with an allocation of Tk. 38,806 lakh (of which Tk. 15,753 lakh in local currency and Tk. 23,053 lakh in Project Aid) for the implementation of 10 projects (8 investment projects and 2 technical assistance projects).

In the remote areas where power cannot be distributed in conventional way, REB has implemented 3 renewable energy projects to provide domestic connections through Solar Home Systems and around 13,000 domestic connections have been provided. REB purchases electricity from PDB and distributes among the consumers. Table 10.9 shows the statistics of purchase and sale of electricity by REB during FY 2009-10:

Table 10.9: The Statistics of Purchase and Sale of Electricity by REB.

Month	MWH purchased		MWH sold/consumed						Avg System loss of 70 PBS (%)	
	Grid Meter	Sub-station	Domestic	Industry	Commercial	Agriculture	Others	Total	Grid Meter	Sub-station
July' 2009	953,796	919,596	436,861	70,209	245,391	28,707	1,237	782,406	17.97	14.92
Aug' 2009	958,145	920,352	468,431	234,269	72,303	16,841	1,261	793,105	17.22	13.83
Sept' 2009	962,614	922,616	480,115	205,088	74,002	16,035	1,237	776,476	19.34	15.84
Oct' 2009	932,289	901,369	507,265	230,994	73,568	28,422	1,250	841,498	9.74	6.64
Nov' 2009	804,324	781,661	397,529	224,314	69,444	30,000	1,212	722,499	10.17	7.57
Dec' 2009	802,833	775,654	384,794	216,748	65,581	25,408	1,182	693,713	13.59	10.56
Jan'2010	919,010	885,931	372,536	244,310	63,859	121,579	1,186	803,469	12.57	9.31
Feb'2010	955,817	925,181	343,708	214,886	60,301	249,565	1,140	869,609	9.02	6.01
Mar'2010	1089,202	1039,997	322,685	235,096	64,270	269,198	1,131	892,381	18.07	14.19
April'2010	1042,789	1002,918	371,443	226,345	66,807	207,322	1,542	873,465	16.24	12.91
May'2010	948,805	914,143	414,711	257,194	69,705	44,993	1,202	787,804	16.97	13.82
June'2010	932,910	900,825	460,412	237,460	73,054	20,428	1,261	792,605	15.04	12.01

Source: REB

The table below shows the statistics of Accounts Receivable and Accounts Payable of REB During FY 2001-01 to FY 2009-10

Table 10.10: The Statistics of Accounts Receivable and Accounts Payable of REB.

Year	Accounts receivable (Months)	Accounts receivable (Taka,000)	Accounts Payable (PDB Bill Outstanding) (12 Month average) * (Tk. 000)
2000-01	2.23	1864124	550383
2001-02	2.21	2349959	427547
2002-03	1.92	2687177	423410
2003-04	1.81	3022224	324628
2004-05	1.85	3446585	90183
2005-06	2.00	4288939	128864
2006-07	1.72	3743158	126441
2007-08	1.54	3765651	11161
2008-09	1.55	4081795	19192
2009-10	1.53	4770491	33830

Source: REB * Considering arrears only above 30 days.

REB Programmes and their Impact:

Environmental and Information Technology Development and Expansion

Government has taken an initiative to conduct a feasibility study to facilitate countrywide fiber optic network for electricity transmission and distribution. A committee has been formed for this purpose. In accordance with the recommendations of the committee, steps have been taken to set up Fiber Optic Network by using the existing infrastructure of power sector entities with PDB as the focal point through joint investment. So far, payroll software has been installed in 70 PBSs. Computerized systems in order to produce financial and statistical reports have already been established in 70 PBSs. In addition, computerized systems have already been introduced in goods inventory, billing systems of those PBSs. Graphic Information System (GIS) is being used in some PBSs and it will be introduced in all PBSs in phases to improve the standard of consumer services.

Dhaka Power Distribution Company Limited (DPDC)

Dhaka Power Distribution Company Limited (DPDC) - a newly formed government owned power distribution company, has started functioning since July 1, 2008 with the assets and liabilities of DESA transferred to it and with a view to ensuring better customer services, accountability and dependable power supply to the consumers. DPDC has already taken various steps to improve and upgrade the electricity distribution system under its jurisdiction.

Number of Customers and Maximum Demand

The number of customers in the FY 2008-09 was 7,00,799 within the DPDC area and it increased to 7,3,7,997 in the FY 2009-10. Maximum system demand was 1,138 MW in the FY 2008-09. which rose to 1,170 MW in the FY 2009-10.

Reform Activities and Good Governance

As part of the ongoing reform programmes in power sector, DPDC was registered as a company on October 25, 2005. From the very beginning, the company undertook different activities to enhance its customer-service to make the company profitable. Following 'Zero Tolerance' principle strictly against corruption, the company started improving by addressing the governance related issues and by infusing dynamism. DPDC started 2 new programmes namely Customer Support Service (CSS) and Distribution Support Service (DSS) to enhance the customer service level. Meter reading and operation and maintenance programmes have been outsourced to 8 Network Operation and Customer Service (NOCS) units out of 32 under Commercial Support Service (CSS).

Motivation programe has been carried out on energy saving. A project titled Technical & Equipment Support for Energy Saving in DPDC Area has already been implemented under which 23,500 energy saving bulbs and 22,000 electronic ballasts have been installed in the *Rajarbag* area. In addition to that, 8.47 lakh energy savings bulbs were installed under the energy saving programme of Bangladesh Government. These bulbs were distributed free of cost to the customers. The above two projects thus played an important role in Clean Development Mechanism (CDM) which aims at reducing carbon emission.

Dhaka Electric Supply Company Ltd. (DESCO)

In the process of on-going Power Sector reform by way of unbundling the power sector and increasing efficiency in the area of generation, transmission and distribution, Dhaka Electric Supply Co. Ltd. (DESCO) was created in November 1996 under the Companies Act 1994 as a public limited company with an authorized capital of Tk. 500 crore. However, the operational activities of DESCO at the field level commenced on September 24, 1998 with the taking over of the electric distribution system of Mirpur area from Dhaka Electric Supply Authority (DESA).

Since its inception, DESCO dedicated its services in ensuring continuous growth and development of its infrastructural facilities to create opportunities for new connections with dependable power supply and provide electricity to the satisfaction of the valued consumers. In view of the satisfactory progress in key areas, the *Gulshan* circle of DESA was handed over to DESCO on April 09, 2003.

Starting from a consumer base of 71,161 and load demand of 90 MW in 1998, the Company has grown to cater to 4,46,129 consumers with a load demand of 622 MW as of June 2010.

The following two tables highlight the technical and commercial activities during FY 2004-05 to FY 2009-10:

Technical Activities

Table: 10.11 Technical Activities of DESCO

S/N	Description	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
	1	2	3	4	5	6	7
01	33/11KV Sub-stations (No.)	13	16	19	21	21	22
02	Capacity of 33/11KV Sub-stations (MVA)	430/602	620/868	680/952	760/1064	760/1064	770/1078
03	Maximum Demand (MW)	377.25	397.60	451	505	545	622
04	33KV Overhead Line (KM)	76.70	76.70	82.80	82.80	82.80	82.80
05	33KV Underground Line (KM)	142.80	143.80	182.20	182.20	184.84	204.37
06	11KV Overhead Line (KM)	600	720	860.40	884.00	959.25	1017.86
07	11KV Underground Line (KM)	238	262	314.35	317.10	317.10	350.12
08	LT Line (KM)	1105	1250	1473.25	1521	1591.39	1671.88
09	Distribution Transformer (No.)	3785	4106	4316	4497	4563	4814

Source: DESCO

Commercial Activities

Table: 10.12 Commercial Activities of DESCO

S/L.	Description	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
	1	2	3	4	5	6	7
01	Energy Import						
	(MKWh)	1842.89	2023.22	2191.46	2573.76	2742.96	2933.72
	(MTk.)	3999.07	4390.39	4946.36	6151.29	7117.53	7845.65
02	Energy Sales						
	(MKWh)	1536.31	1695.55	1897.00	2293.03	2474.51	2673.69
	(MTk.)	5428.08	6280.06	7219.58	9094.19	9888.30	10911.20
03	System Loss (%)	16.64	16.20	13.44	10.91	9.79	8.86
04	Collection Amount (MTk.)	5305.85	6207.45	7705.86	9095.30	9708.62	10774.84
05	Collection Ratio (%)	97.07	99.11	104.40	100.01	98.18	98.75
06	C. I. Ratio (%)	80.92	83.06	90.37	89.10	88.57	90.00
07	Consumers	259580	281960	347614	385037	415842	446129

Source: DESCO

Billing/Collection

The primary objective of maintaining the financial strength of the Company has been achieved by putting in continuous efforts to maintain a healthy billing-collection ratio. During the FY 2009-10 an amount of Tk.1,077.48 crore was collected against the sales amount of Tk. 1,091.12 crore and the bill-collection ratio was 98.75 percent while the Collection-Import (C.I.) ratio was 90.01 percent.

System Loss

This is the key performance indicator of any electric distribution company and is determined by the quantity of energy produced and quantity of energy sold. The system loss is 8.86 percent during the current year as against 9.79 percent in the previous year.

Reforms and Efficiency Improvement Measures

The succeeding paragraphs provides a snapshot on reform programmes undertaken in the power sector:

Policy:

Under the reform programmes the following policies and guidelines have been prepared and adopted by the Government:

- Private Sector Power Generation Policy of Bangladesh,1996
- Policy Guidelines for Small Power Plant(SPP),1998
- Remote Area Power Supply System (RAPSS) Guidelines
- Policy Guidelines for Power Purchase from Captive Power Plant,2008
- Policy Guidelines for Enhancement of Private Participation in the Power Sector, 2008
- Renewable Energy Policy of Bangladesh
- Vision Statement & Policy Statement of Power Sector Reform
- Bangladesh Private Sector Infrastructure Guidelines
- Updated 3-year Road Map (2008-2010)
- Power Pricing Framework
- Draft Energy Conservation Act
- Bangladesh Energy Regulatory Commission Act 2003
- Public Private Partnership (PPP) Policy, 2010

Generation

- *Ashuganj* Power Station of BPDB has been converted to *Ashuganj* Power Station Company Ltd. (APSCL). The company started functioning in 2003.
- North West Zone Power Generation Company Ltd. (NWPGCL) was established in August 2007. The company will implement *Khulna* and *Sirajganj* 150 MW and *Bheramara* 360 MW power plants.
- Electricity Generation Company of Bangladesh (EGCB) has been established to implement, own and operate the proposed 2x120 MW and 2x150 MW peaking power plants at *Siddhirganj* and 360 MW combined cycle power plant at *Haripur*. EGCB will also own existing generation assets of *Siddhirgonj* and *Haripur* Power Stations of BPDB.
- Rural Power Company Limited (RPCL) was registered in 1994. The company has been supplying 210 MW of electricity to the national grid.

Transmission

- Power Grid Company of Bangladesh Limited (PGCB) was created in 1996. All the transmission assets (100 percent) including Load Dispatch Center (LDC) have been transferred from BPDB to PGCB.
- PGCB offloaded its 25 percent shares to the public through capital market in 2006.
- In accordance with "Policy Guidelines for Enhancement of Private Participation in the Power Sector" transmission network will be made 'Open Access'.

Renewable Energy

The use of renewable energy has increased considerably in developed and developing countries in recent times. In Asia, India and China have achieved considerable success in innovating and using the technology of renewable energy. Although the initial installation cost of renewable energy is higher, but it will gradually decline and will come down within the purchasing capacity of the people. As the global reserve of fossil fuel is gradually depleting, the Government of Bangladesh has taken steps to extend and develop the use of renewable energy to ensure future energy security for the country. Under this plan, targets have been set to produce electricity from renewable sources which will be 5 percent of the total production by the year 2015 and 10 percent by 2020. Renewable Energy Policy has also been adopted to attract and encourage private sector investors. In addition, the Government is going to set up a Sustainable Energy Development Authority (SEDA) to expand and develop renewable energy saving and energy efficiency and to create awareness among the users of electricity. Recent initiatives on Renewable Energy are described below:

- Present Solar Power Generation: 15-20 MW
- PDB, REB and IDCOL are distributing Solar Home System (SHS) to the people living in the off-grid areas. IDCOL through different NGOs has already distributed 4.5 lakh SHS through out the country.
- PDB has already installed nearly 11 KW solar power in the CHT area, nearly 230kW solar power in *Angorpota* and *Dahagram* enclaves , 115 W in the WAPDA office building.
- A Solar Panel with a capacity of 21.2 KW has been installed at the Prime Minister's office.
- Nearly 10MW capacity solar plant will be installed by PDB in Sarishabari (2-4 MW), Regional Training Office, Rajshahi (1 MW), Rajabarihat, Godagari (2-4 MW), Kaptai Power Plant (4-5 MW) using IPP model. Preparation of tender documents is underway.
- DPP has been prepared to cover 4 isolated islands under solar and wind power.
- REB has taken a project for solar irrigation system. 20 irrigation pumps will be brought under solar power under this project.
- Installed wind mill at Kutubdia and Feni : 2MW
- DPP has been prepared for wind mapping.
- 100 MW of wind power will be generated in the off-shore area of *Anwara, Chittagong* using IPP model. PQ has already been prepared and the tendering is underway.
- Government has allowed exemption of income tax for the next 5 years from commercial production of renewable energy.

Energy Efficiency and Energy Conservation

Energy conservation is an important element of energy policy. Energy conservation reduces the energy consumption and energy demand per capita. It can be achieved through efficient energy use or reduced consumption of energy services. To cater to this need, formulation of Energy Conservation Act is underway.

The Government has taken a number of steps to ensure efficient energy use and reduce consumption of energy which include:

- Distribution of 1.05 crore CFL at free of cost.
- Installation of solar power by domestic, commercial and industrial consumers at time of providing new connections
- Steps taken to revise the Building Code inserting the provision for energy efficiency and solar energy
- Steps have been taken to incorporate energy efficiency and solar energy issue in the academic curricula of Schools/*Madrasas*/Colleges to build awareness amongst the students,.
- Installation of solar panel in the Government Semi-Government and Autonomous organizations within next 3 years
- Use of CFL bulbs in all ministries and power sector entities
- Conventional street lights will be replaced by LED and solar power subsequently
- Public awareness for energy conservation
- Discontinuation of incandescent bulb and electric heater gradually
- Limited use of air conditioners keeping temperature within 25 C
- Introduction of Energy Star Rating system in the electric appliances through BSTI
- Discouraging use of neon sign in the markets/ shopping malls at night
- Closing of markets and shopping malls within 8 p.m.
- Introducing pre-paid metering system all over the country to reduce system loss and use of electricity.

Fuel

Natural Gas

In Bangladesh natural gas is one of the important sources of energy that accounts for 75 percent of the commercial energy usage of the country. Until the present time, 23 gas fields have been discovered in the country. The estimated recoverable proved reserve of the 23 gas fields is 20.605 TCF. Out of which, as of June 2010, a total of 9.08 TCF gas has already been produced leaving the reserve at 11.528 TCF only. On the other hand, the estimated proven and probable (P1+P2) reserve of the 23 gas fields is 20.605 TCF and as of June 2010, the left over proven and probable (P1+P2) recoverable reserve is 11.528TCF. The probable reserve (P2) needs to be converted into proven reserve (P1) through further appraisal/development drilling programme for effective gas based forward planning.

The total gas reserve, extractable gas and cumulative gas production up to June 2009 are shown in Table 10.13.

Table 10.13: Total Gas Reserve, Extractable Gas and Cumulative Production of Gas

(In Billion Cubic Feet)

Gas field	Recoverable Reserve (Proved + Probable)	Production July 09-June 10	Cumulative Production Upto June 2010 (Provisional)	Remaining Recoverable Reserve (Proved+ Probable)
Producing				
Bakhrabad	1049.0	12.9	705.10	343.9
Habiganj	3852.3	85.8	1730.3	2149.74
Jalalabad	836.5	59.5	568.7	267.8
Kailashtilla	1903.3	33.0	499.0	1404.3
Meghna	119.6	0.0	35.8	83.8
Narsingdi	215.1	12.0	110.9	54.5
Rashidpur	1401.2	33.0	4466.1	935.1
Sylhet	5127.50	1.1	187.6	289.1
Sangu*	848.5	13.4	471.3	164.2
Salda Nadi	116.1	3.1	16.6	54.5
Titas	5127.5	147.6	3143.7	1983.8
Beanibazar	170.2	5.4	161.3	8.9
Fenchuganj	282.8	9.0	69.4	213.4
Feni	130.0	0.6	62.4	67.2
Moulvibazar	359.6	21.3	161.3	198.3
Bibiyana	2400.8	240.1	600.8	1800.0
Bangura	309.00	38.4	117.6	191.4
Not in Production				
Begumganj	32.7	0.0	0.0	32.7
Kutubdia*	45.5	0.0	0.0	45.5
Semutang	150.3	0.0	0.0	150.3
Shahbazpur	32.7	0.0	2.6	32.7
Production Suspended				
Chhatak	473.9	0.0	26.46	447.4
Kamta	50.3	0.0	21.1	29.2
Total	20605.1	703.6	9077.66	11528.1

Source: Energy and Mineral Resources Division

***** Offshore field

Presently, 79 wells in 18 gas fields are in production. The producing gas fields are: Titas (14 wells), Bakhrabad (4 wells), Habiganj (9wells), Rashidpur (5 wells), Kailashtilla (6 wells), Sylhet (1 well) Narsingdi (2 wells), Meghna ((0 well), Saldanadi (2 wells), Fenchuganj (2 wells), Sangu (6 wells), Jalalabad (4 wells), Beanibazar (2 wells), Feni (1 well), Maulavibazar (4 wells), Bangura (4 wells), Shahbazpur and Bibiyana (12 wells). A total of 653.7 billion cubic feet (BCF) gas was produced in the FY 2008-09 while in the FY 2009-10, total gas production was 703.6 BCF while. gas production growth rate was 7.60 percent in FY 2009-10. Year-wise and sector-wise gas consumption and demand are shown in Table 10.14 and 10.15 respectively.

The present Government has formulated various plans for the gas exploration activities since its assumption of office. Moreover, about 60 mmcfd gas is expected to be added through drilling of 04

exploration wells at Kapasia, Srikail, Sundalpur and Mobarakpur by the national gas exploration company, BAPEX. To increase gas supply in near future, a fast track programme has been undertaken by Petrobangla. Another 135 mmcfd gas could be added to the national grid by drilling 5 development wells at Titas and Rashidpur gas fields. As well as work in 1 well at Rashidpur gas field is progressing under the Fast Track programme. Under this programme 1823 mmcfd gas will be added in the national gas grid by the end of December 2015. Simultaneously, to cater the increasing demand for gas across the country particularly at the Chittagong region, necessary steps have been taken to add about 500 mmcfd gas through import of LNG by 2012.

The main source of fuel for power, fertilizer, industrial, commercial and domestic sectors is natural gas. Year and sector wise gas consumption and demand are shown in Table 10.14 and 10.15 respectively.

Table 10.14: Consumption of Natural Gas by Sector

(In billion cubic feet)

Fiscal Year	Produc -tion	Sectors									Total Sales
		Power	Fertiliser	Industry	Captive Power	Tea Estate s	B. Fields (Season	Commer -cial	Domestic	CNG	
1999-00	332.35	147.62	83.31	41.52		0.64	0.35	3.85	29.56	0	306.85
2000-01	372.16	175.27	88.43	47.99		0.65	0.44	4.06	31.85	0	348.69
2001-02	391.53	190.03	78.78	53.56		0.72	0.53	4.25	36.74	0	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	46.49	32.03	0.80	0.12	4.83	49.22	1.94	427.66
2004-05	486.75	211.02	93.97	51.68	37.87	0.80	0.00	4.85	52.49	3.62	456.30
2005-06	526.72	222.72	88.58	63.44	49.02	0.76	0.00	5.24	57.13	6.71	493.61
2006-07	562.22	221.10	93.47	77.48	93.47	0.75	0.00	5.66	63.25	11.9	536.21
2007-08	600.86	234.28	78.67	92.19	80.23	0.71	0.00	6.60	69.02	22.82	584.51
2008-09	653.75	256.31	74.85	104.39	94.7	0.65	0.00	7.46	73.78	31.02	643.16
2009-10	703.6	283.15	64.72	64.72	118.81	0.80	0.00	8.12	82.69	39.33	710.23

Source: Energy and Mineral Resources Division

Table-10.15: Sector-wise Demand for Natural Gas

(In billion cubic feet)

Sector	2009-10	2010-11	2011-12	2012-13	2013-14
Power	283.10	300.5	324.5	350.5	378.5
Captive	112.60	142.6	164.0	188.6	216.9
Fertilizer	94.0	94.0	94.0	84.0	94.0
Industry	118.80	160.7	184.8	214.4	243.5
Commercial	8.10	9.8	10.8	11.7	12.6
Brick Field (Seasonal)	0.0	0.0	0.0	0.0	0.0
Domestic	82.7	99.5	111.44	124.8	139.8
Tea-Estates	0.8	1.0	1.0	1.0	1.0
CNG	39.3	44.7	51.36	56.5	113.0
*System Loss	-7	20.0	20.0	20.0	20.0
Total	732.40	913.9	962.0	1061.5	1222.4

Source: Energy and Mineral Resources Division
*Including own use.

In Bangladesh, exploration and development of new gas fields to meet the increasing demand of gas has become an imperative. To intensify exploration activities, the whole country has been divided into 23 blocks. As a result, International Oil Companies have signed 10 Production Sharing Contracts (PSCs) for 12 acreage blocks. Out of these, 2 PSCs have already been expired. Currently, 8 PSCs are in force in 10 acreage blocks. Besides these, offshore area of the country has been divided into 28 new blocks and an international tender has been floated to start exploration activities in offshore areas under Production Sharing Contract. 7 IOCs, in response, have submitted bids for 15 blocks.

LPG

With a view to reducing the import of fuel and keeping the environment clean, an LPG plant was established at Kailashtila in Sylhet in 1998. In November, 2007 another NGL/Condensate fractionation plant was installed and commissioned by a foreign contractor on turnkey basis at the same premises. Both the plants are producing sulphur and lead- free and environment-friendly quality LPG and Motor Spirit (Petrol) and the recently installed plant is also producing HSD through the processing of NGL and condensate respectively. It is to be noted that the capacity of both the plants for processing of NGL and Condensate are 175 metric tonnes NGL and 110 metric tonnes Condensate from which 62 metric tonnes LPG, 2,70,000 litre MS and 43,000 litre high speed diesel (HSD) can be produced per day. However, due to the shortage of raw materials, 16 metric tonnes LPG, 1,02,000 litre MS and 20,000 litre HSD are being produced per day by processing about 52 metric tonnes NGL and 44 metric tonnes condensate.

Condensate produced from the gas fields of Sylhet region are being transported to the Ashugonj Installation of RPGCL through the north-south pipeline. The supplied condensate is stored at Ashugonj storage tank and then delivered to the ship of BPC for carrying it to the Eastern Refinery Ltd. for processing. Initially condensate delivery quantity was 50-60 lakh litre per month. Now this quantity has reached up to 220 – 250 lakh litre.

CNG

Vehicle conversion to Compressed Natural Gas (CNG) is being carried out and promotion of this mode of fuel is being encouraged. Before using CNG, the uncontrolled emission of motor vehicles especially from two stroke three-wheeler baby taxis and diesel buses was a major cause for air pollution in urban areas, especially in Dhaka City. Natural gas of Bangladesh consists of more than 96 percent methane typically and contains no sulfur practically.

Use of CNG is having a positive impact on the economy of the country. CNG stations are consuming approximately 3250 MMCM gas daily. The number of CNG run vehicles is increasing day by day and, the rate of air pollution has reduced remarkably due to the widespread use of CNG.

Coal

In Bangladesh, the reserve of coal is about 2,700 million tonnes, which is equivalent to 37 tcf natural gas, in 5 coal fields so far discovered, namely Barapukuria, Khalashpir, Phulbari, Jamalgonj and Dighipara. Commercial production of Barapukuria coal mine commenced from 10 September 2005 with the targeted capacity of one million metric tonne per year. Most of the coal is being used in the

250 MW power plant. During FY 2009-10, a total of 0.77 million metric ton of coal was extracted from the coal mine. By achieving the full targeted capacity, coal will be locally used particularly in the brickfields, steel mills, tea-estate and other industries and will have an impact on reducing deforestation.

Hard Rock

The annual demand of hard rock in Bangladesh is about 60-65 lakh metric tonnes, out of which Madhyapara hard rock mine has been operating since 25 May 2007 with the targeted capacity of 16.50 lakh metric tonnes per year (5500 tons per day) . Since it became operational up to June 2010, about 13,16,167 metric tonnes hard rock was extracted from Madhyapara hardrock mine. The extracted hardrock is used for various construction works like flood control, coastal and town protection, embankment construction and maintenance of bridges, roads, highways, railways, river training and high rise buildings.

Bangladesh Petroleum Corporation (BPC)

Petroleum Commodities

Bangladesh Petroleum Corporation (BPC) has completed development and expansion of fuel reserve system by modernizing and upgrading the fuel supply system conforming to international standards for international and domestic flights. Apart from this, BPC is responsible for development and expansion of fuel reserve system throughout the country. Currently, its total fuel stock capacity is 8.53 lakh metric tons.

The following two tables (Table- 10.16 and 10.17) present the information on import of refined and crude petroleum commodities by Bangladesh Petroleum Corporation during FY 1998-99 to 2008-09:

Table 10.16: Import of Crude Petroleum Commodities

Fiscal Year	Quantity (Metric Tonne)	C & F Price (Million US Dollar)	Crore Tk.
1998-99	9,55,874	98.10	473.72
1999-00	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
2002-03	13,31,003	289.30	1693.03
2003-04	12,52,424	314.12	1848.43
2004-05	10,63,208	364.01	2261.98
2005-06	12,53,285	552.12	3750.69
2006-07	12,11,037	659.09	4455.06
2007-08	12,41,815	914.50	6179.12
2008-09	8,60,877	494.44	3431.40
2009-10	11,81,097	823.69	5728.64

Source: Bangladesh Petroleum Corporation

Table 10.17: Import of Refined Petroleum Commodities

(Quantity in Metric tonne, Value in Crore)

Fiscal Year	JP-1, Kerosene, Petrol, Octane and Diesel		Lubricating	
	Quantity	Value	Quantity	Value
1998-99	22,21,872	1350.10	39961	45.62
1999-00	18,23,400	2021.23	50229	86.41
2000-01	20,68,913	2999.20	29918	69.34
2001-02	20,72,300	2535.62	15316	30.59
2002-03	22,13,899	3319.35	1911	5.10
2003-04	22,62,348	4015.81	6516	18.38
2004-05	26,91,750	7213.88	10189	38.14
2005-06	23,80,533	9382.77	5137	35.53
2006-07	25,36,092	10542.88	778	4.36
2007-08	22,27,754	14346.68	5005	29.99
2008-09	25,07,819	10945.24	4828	23.63
2009-10	27,29,477	15626.38	7249	63.29

Source: Bangladesh Petroleum Corporation

BPC's contribution to the National Exchequer, financial Loss

BPC deposited Tk. 3,332 crore to the National Exchequer during the FY 2009-10 on account of import duty and tax though it made a loss of Tk. 1,689.84 crore in the same year due to lower local sales price (Transfer Price) against higher purchase cost. BPC incurred a loss of Tk. 266.23 crore while it deposited Tk. 2,794.56 crore to the National Exchequer during FY 2008-09. Following table 10.18. shows BPC's contribution to the National Exchequer (as import, tax etc.) and financial Loss(due to marketing of POL)

Table 10.18: BPC's Contribution to the National Exchequer and Financial Loss

(Crore Tk.)

Fiscal Year	Contribution to the National Exchequer	Financial Loss
2002-03	2766.13	7.61
2003-04	3087.28	958.93
2004-05	2458.95	2317.88
2005-06	2620.26	3337.78
2006-07	2627.00	2643.88
2007-08	3018.00	6362.08
2008-09	2794.56	266.23
2009-10	3332.00	1689.84

Source : BPC.

Bangladesh Petroleum Institute (BPI)

Considering the contribution of the oil, gas and mineral resources sector in the industrial development of Bangladesh, Bangladesh Petroleum Institute (BPI) was set up as a development project under the Ministry of Energy, Power & Mineral Resources in 1981. BPI is providing higher training to the officers and professionals working in the oil, gas and mineral resources sector, carrying out research and other development activities and improved data management activities under the guidance of a 10- member governing board. Since its inception, BPI has been carrying out photo-geology, geophysical modeling and other similar surveys in order to identify likely locations/sites for petroleum and gas exploration. Till date (30 June 20010) BPI has organized 280 training course/workshops/seminars and provided training to 5189 officials during FY 2009-10. BPI also organised 12 courses of varying duration (on oil/gas exploration drilling, production, refining distribution, marketing, etc.) and provided training to 220 officials through these courses.

Geological Survey of Bangladesh (GSB)

Geological Survey of Bangladesh (GSB) is entrusted with the tasks of carrying out exploration, discovery and evaluation of mineral deposits, and research in different disciplines of geosciences. To strengthen the mineral exploration and evaluation activities, the department is implementing various development projects. As a result, low sulfur, high-grade bituminous coal at Barapukuria and Dighipara of Dinajpur District and Khalashpir of Rangpur district, and Maddhyapara hard rock of Dinajpur district have been discovered. Besides these, glass sand, white clay, limestone, peat and gravel deposits have been discovered in different places of the country. Moreover, skilled manpower and a good number of resource persons of different fields of geo-sciences have been developed by GSB through imparting training. A good number of research facilities have also been created in different laboratories of GSB.