CHAPTER 10
POWER AND ENERGY

[*Power and energy are critical to the socio-economic development of the country as well as to the enhancement of living standard. According to the provisional estimates released by BBS, in FY 2010-11, the contribution of power sector to GDP is 1.31 percent at constant price while the contribution from "Natural Gas and Crude Petroleum '' and "Coal and other Mineral resources" together is estimated at 1.26 percent. Both the sectors posted growth rates of 6.50 percent and 4.85 percent respectively in FY 2010-11. There is a huge demand for power, oil, gas ,and other mineral resources in various sectors of the economy including agriculture, industry, transport and communication.. As the total demand for power is on the increase, the Government has given top priority to the development of power sector. A policy has been formulated to encourage private sector to generate electricity under public-private partnership (PPP), rental power producer (RPP), and independent power plant (IPP) arrangements. Side by side, the demand for petroleum products, gas and other energy products are also increasing day by day. Achieving the avowed goal of transforming Bangladesh into a middle income country according to "Vision 2021" declared by the Government is closely linked to meeting the escalating demands for power and energy. The Government has therefore, charted out short, medium and long term planning for the development power and energy sectors. Besides this, it has also given top priority to augment investment in these sectors.****]***

Power Sector

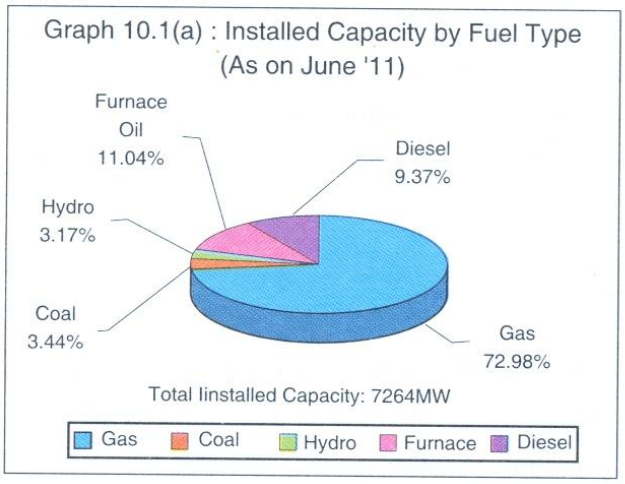
Planned and appropriate use of power is one of the pre-conditions for economic development of Bangladesh. There is a huge demand for electricity in our day-to-day life as well as in various sectors of the economy. Besides the day to-day household power consumption, the scale of demand for electricity in agriculture, SMEs and in other sectors is on the increase. The total power produced in the country is not enough to ensure adequate access to electricity. As of now, only 48.5 percent of the total population has access to electricity.

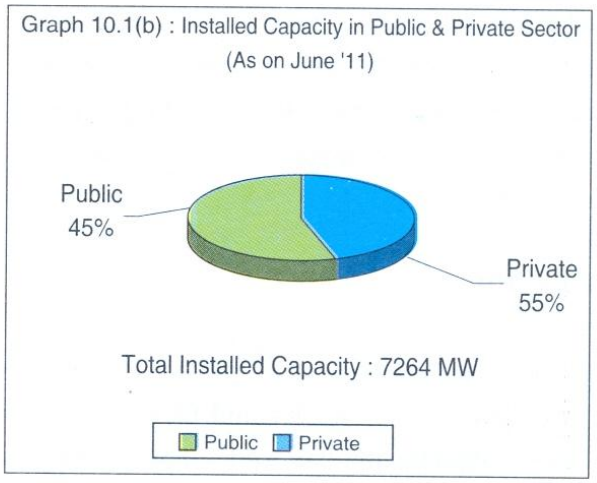
Per capita electricity generation is only 252 kwh, which is very low compared to other developing countries. In order to improve this situation, the Government has given the highest priority to power sector development and is committed to make electricity available to all by 2021. Several programmes have already been taken up to implement short, medium and long term plan for the balanced development of power sector to scale up electricity generation. There is a plan to connect new power plants with the capacity of 15,000 MW from public and private sector during the year of 2010 to 2016 by using Natural gas based power plants also by using liquid petroleum ,coal, duel fuel, renewable energy for increasing electricity generation under various programmes. After taking the power by the present government, power plants with the capacity of 2220 MW has already gone to production commercially and 21 power plants projects are under construction with 1779 MW production capacity. Activities are in progress to start power plants with the capacity of 2194 MW in 2011, 2157 MW in 2012, 2174 MW in 2013, 2323 MW in 2014 , 2350 MW in 2015 and 2800 MW in 2016 as envisaged in the overall planning.

Generation Capacity and Demand

In FY 2010-11, total installed generation capacity stood at 7264 MW, of which the share of public sector (including REB) was 4027 MW and that of private sector was 3237 MW In FY 2010-11, total installed production capacity is 7264 MW of which 4027 MW from public sector and 3237 MW from private sector. In the public sector, a good number of generation plants have become very old and have been operating at a much-reduced capacity. Besides, meeting the real power demand by these plants is constrained due to shortage of gas supply. As of June 2011 maximum actual generation stood at 4,890 MW.

The installed capacity by fuel type and in public and private sector as of June 2011 are shown in the following graphs.

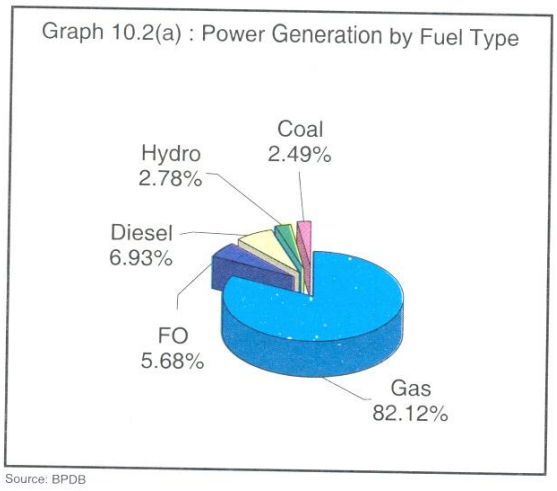


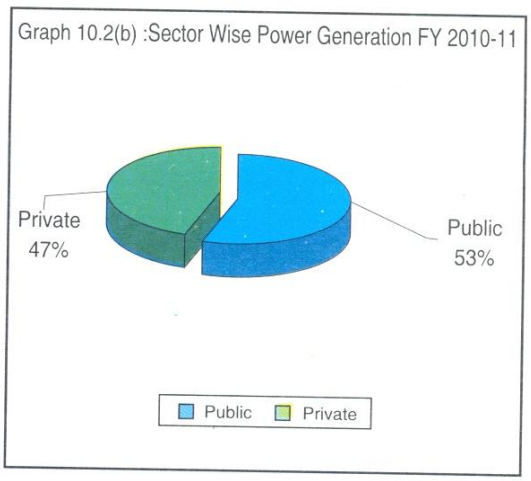


Source: BPDB

Power Generation

A total of 31,355 million-kilowatt hour (MkWh) net electricity (including REB) was generated during FY 2010-11. The Public sector generated 47 percent of total net generation and the private sector generated the rest 53 percent. The share of gas, hydro, coal and oil based power generation stood at 82.12 percent, 2.78 percent,, 2.49 percent, and 12.6 percent, respectively. In FY 2009-10 and 2008-09 the net power generation stood at 29,247 million-kilowatt hour (MkWh) and in 26,533 million-kilowatt hour (MkWh) respectively. The growth of power generation in FY 2010-11 was 7.21percent. The net power generation is shown in following graph:





The consumption of natural gas in BPDB's power plants was 1,06,593 million cubic feet in FY 1995-96, which increased to 1,50,031 million cubic feet in FY 2010-11. The consumption of natural gas and liquid fuel since FY1995-96 is shown in Table 10.1

Table 10.1: Fuel Consumption by BPDB Power Plants

Fiscal Year	Natural gas (Million cft)	Liquid fuel (million liter)	
		Furnace Oil	HSD, SKO & LDO
1995-96	1,06,593	63	167.97
1996-97	1,07,240	104	2534
1997-98	1,20,376	904	267
1998-99	1,36,802	44	204
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
2010-11	1,50,031	119	138

Source: Bangladesh Power Development Board.

Maximum Generation

Actual demand could not be met over the last few years due to shortfall in generation though recently the installed capacity has increased slightly. Maximum generation was 2,087 MW in 1995-1996 which was enhanced to 4,890 MW in FY 2010-11. The installed capacity and maximum generation since FY1995-96 are shown in Table 10.2

Table-10.2: Installed Capacity and Maximum Generation

Fiscal Year	Installed capacity (MW)	Maximum generation (MW)
1995-96	2908	2087
1996-97	2908	2114
1997-98	3091	2136
1998-99	3611	2449
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
2010-11	7264	4890

Source: Bangladesh Power Development Board.

Power Generation Programme

The Government has prepared a Power Sector Master Plan 2010 (PSMP-2010) to realise the goal to provide access to electricity to all. According to the Master Plan study, the maximum demand in 2015, 2021 and 2030 would be around 10,000, 19,000 and 34,000 MW respectively. To meet the demand with reasonable reliability, installed capacity will be increased to 24,000 MW and 39,000 MW by 2021 and 2030 respectively. To meet the increasing demand for electricity a number of expansion projects are at the varying stages of implementation. According to the existing generation expansion program, a total of 15,000 MW of new generation will be added to the national grid between FY 2010-2016. Present status of the existing generation programs are given in Table 10.3 below:

Table-10.3 Year Wise Power Generation Plan from 2010 to 2016

(In MW)

YEAR	2010	2011	2012	2013	2014	2015	2016	Total
Public	255	851	838	1040	1270	450	1500	**6204**
Private	270	105	1319	1134	1053	1900	1300	**7081**
Quick Rental	250	1238	-	-	-	-		**1488**
Total	**775**	**2194**	**2157**	**2174**	**2323**	**2350**	**2800**	**14,773**

Source: Power Division

Table-10.3.1: Power Generation Projects up to 2016

(A) Under Construction

Public Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	*Faridpur* 50 MW Peaking Power Plant	54	BPDB	September, 2011
02.	*Doudkandi* 50 MW Peaking Power Plant	52	BPDB	September, 2011
03.	*Gopalganj* 100 MW Peaking Power Plant	109	BPDB	September, 2011
04.	*Bera* 70 MW Peaking Power Plant	71	BPDB	15 September, 2011
05.	*Fenchuganj* 90 MW CCPP EPC: M/S Harbin Power Eng. Co. (HPE)	105	BPDB	September, 2011
06.	*Dohazari* 100 MW Peaking Power Plant	102	BPDB	15 September, 2011
07.	*Hathazari* 100 MW Peaking Power Plant	98	BPDB	20 September, 2011
08.	*Sylhet* 150 MW Power Plant	150	BPDB	25 October, 2011
09.	*Chandpur* 150 MW CCPP	106	BPDB	October, 2011
10.	*Siddhirganj* 2X120 MW Peaking Power Plant(1st unit) EPC: BHEL	105	EGCB	November, 2011
11.	*Gazipur*	50	RPCL	17 November, 2011
12.	*Chandpur* 150 MW CCPP	57	BPDB	March, 2012
13.	*Santahar* 50 MW Peaking Power Plant	50	BPDB	March, 2012
14.	*Katakhali* 50 MW Peaking Power Plant	50	BPDB	April, 2012
15.	*Sirajganj* 150 MW GT	150	NWPGC	July, 2012
16.	*Khulna* 150 MW GT	150	NWPGC	May, 2013
17.	*Raujan*	20	RPCL	July, 2012
	Sub-Total (Public)	**1479**		

Private Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	*Amnura, Chapainawabgonj* Sponsor*: Sinha* Power	50	Rental (BPDB)	September, 2011
02.	*Keranigonj* Sponsor: Power Pack	100	Rental (BPDB)	September, 2011
03.	*Julda, Chittagong* Sponsor: Acorn Infra. Service Ltd	100	Rental (BPDB)	October, 2011
04.	*Katakhali, Rajshahi* Sponsor: NPSL	50	Rental (BPDB)	23 October., 2011
	Sub-Total (Private)	**300**		
	Total (Under Construction) (A)	**1779**		

(B) Under Process

Public Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	*Chapainawabganj*	100	BPDB	November, 2012
02.	*Kodda, Gazipur* 150 MW Power Plant	150	BPDB- RPCL Powergen Ltd.	December, 2012
03.	*Ghorasal* 200-300 MW Peaking	290	BPDB	March, 2013
04.	*Siddirganj* 450 MW CCPP	450	EGCB	December, 2013
05.	*Bhola* 150 MW CCPP	150	BPDB	December, 2013
06.	*Haripur* 360 MW CCPP	360	EGCB	January, 2014
07.	*Barapukuria* 250-300 MW (3rd Unit)	250	BPDB	June, 2014
08.	*Ashugonj* 150 CCPP	150	APSCL	June, 2014
09.	*Shikalbaha* 150-225 MW CCPP	150	BPDB	June, 2014
10.	*Bheramara* 360 MW CCPP	360	NWPGC	December, 2014
11.	*Ashuganj* 450 MW CCPP	450	APSCL	March, 2015
12.	*Meghnagat* 750 MW (3rd Unit)	750	BPDB	March, 2016
13.	Dhaka North	750	JVC RPCL and Local or Foreign intrepreneur or through export credit financing	March, 2016
	Sub-Total (Public)	**4360**		

Private Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	*Tangail* 20 MW	20	IPP (REB)	June, 2012
02.	*Chandpur* 15 MW	15	IPP (REB)	June, 2012
03.	*Narayangonj* 30 MW	30	IPP (REB)	June, 2012
04.	*Shantahar* Peaking Plant	50	IPP (BPDB)	November, 2012
05.	*Syedpur* Peaking Plant	100	IPP (BPDB)	November, 2012
06.	*Jamalpur* Peaking	100	IPP (BPDB)	November, 2012
07.	*Comilla (Jangalia)* Peaking	50	IPP (BPDB)	September, 2012
08.	*Khulna* Peaking	100	IPP (BPDB)	November, 2012
09.	*Dhaka(Aminbazar)*100 MW Power Plant	100	IPP (BPDB)	September, 2012
10.	*Dhaka(Aminbazar)* 50 MW Power Plant	50	IPP (BPDB)	September, 2012
11.	*Chittagong (Patenga)*100 MW Power Plant	100	IPP (BPDB)	November, 2012
12.	*Chittagong(Mohora)* 50 MW Power Plant	50	IPP (BPDB)	October, 2012
13.	*Rajshahi(Ishwardi)*100 MW Power Plant	100	IPP (BPDB)	November, 2012
14.	*Rajshahi (Natore)* 50 MW Power Plant	50	IPP (BPDB)	November, 2012
15.	*Khulna(Labonchora)*100 MW Power Plant	100	IPP (BPDB)	November, 2012
16.	*Barisal* 50 MW Power Plant	50	IPP (BPDB)	September, 2012
17.	*Bhola* 150-225 MW CCPP (2^{nd} unit): SC GT Unit	147	IPP	October, 2012
18.	*Kaliakoir* Peaking Plant, Gazipur	100	IPP	November, 2012
19.	*Savar* Peaking Plant, Dhaka	100	IPP	March, 2013
20.	*Bibiana* 300-450 MW CCPP (1^{st} Unit): SC GT Unit	222	IPP	May, 2013
21.	*Bibiana* 300-450 MW CCPP (2^{nd} Unit): SC GT Unit	222	IPP	May, 2013
22.	*Meghnaghat* 300-450 MW CCPP (2^{nd} Unit) Duel Fuel: SC GT Unit	220	IPP	June, 2013

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
23.	*Keraniganj* 150 MW CCPP :SC GT Unit	100	IPP	June, 2013
24.	*Madanganj* 150-225 MW CCPP : SC GT Unit	100	IPP	June, 2013
25	*Bhola* 150-225 MW CCPP (2^{nd} unit): ST Unit	70	IPP	August, 2013
26.	*Bibiana* 300-450 MW CCPP (1^{st} Unit): ST Unit	119	IPP	March, 2014
27.	*Bibiana* 300-450 MW CCPP (2^{nd} Unit): ST Unit	119	IPP	April, 2014
28.	*Meghnaghat* 300-450 MW CCPP (2^{nd} Unit) : ST Unit	115	IPP	April, 2014
29.	*Keraniganj* 150 MW CCPP : ST Unit	50	IPP	June, 2014
30.	*Madanganj* 150-225 MW CCPP : ST Unit	50	IPP	June, 2014
31.	*Sirajganj* 300-450 MW CCPP	300	IPP	June, 2014
32.	*Chittagong* 150-300 MW Coal Fired Power Project	150	IPP	Sept. 2014
33.	*Khulna* 150-300 MW Coal Fired Power Project	150	IPP	Sept. 2014
34.	*Khulna* South	1300	PPP (Joint Vent.) / IPP	March, 2015
35.	*Maowa, Munshiganj* 300-650 MW Coal Fired Power Project	300	IPP	Sept. 2015
36.	*Chittagong* 300-650 MW Coal Fired Power Project	300	IPP	Sept. 2015
37.	*Chittagong*	1300	PPP (Joint Vent.) / IPP	June, 2016
	Sub-Total(Private)	**6599**		
	Total (Under Process)(B)	**10959**		
	Gross Total (A+B)	**12,738**		

(C) Solar & wind Power Projects

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	Kaptai Solar	5	BPDB	December, 2012
02.	Solar	7	IPP (BPDB)	June, 2012
03.	Wind	100	IPP (BPDB)	January, 2013
	Total (C)	**112**		
	Total (A+B+C)	**12,850**		

Source: Power Division

Power Distribution

Distribution system comprises of 33kV, 11kV and 0.4kV lines. In 1995-96 total distisbution lines in the BPDB system was 35,962 km, which has decreased about 29,991 km in FY 2010-11 due to some distisbution lines are handed over to REB & WZPDCL. The number of consumers has also been increased to 21,59,440 in FY 2010-11 from 20,67,338 in FY 2009-10.

At present five organizations are responsible for power distribution. These are 1. Bangladesh Power Development Board (BPDB), 2. Rural Electrification Board (REB), 3. Dhaka Power Distribution Company (DPDC), 4. Dhaka Electric Supply Company (DESCO) and 5. West Zone Power Distribution Company (WZPDC). In order to increase power generation as well as to improve customer service and

bring more people under electrification, integrated power distribution programmes have been undertaken. Upto June 2011, about 1.25 crore consumers are connected with electricity by construction of 278,000 kilometer distribution lines. Achievement of distribution sector is mentioned in table 10.3.2 below:

Table 10.3.2 Achievement of distribution sector.

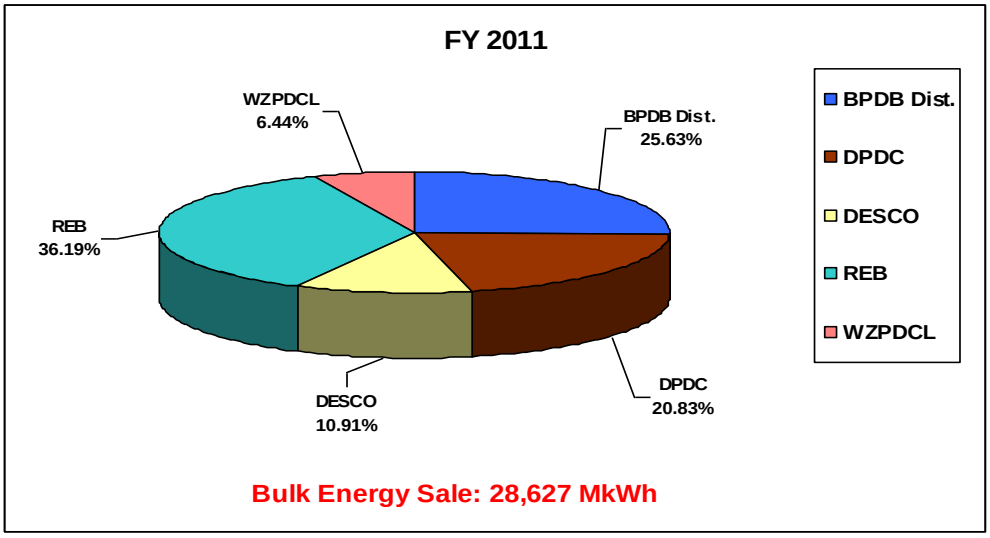
Total Distribution Lines	278,000 KM
Total Consumers	12.5 million
Irrigation Consumer	2.77 Lac
Access to electricity	50%
Distribution Loss	12.75%
Accounts Receivable	2.22 Equivalent months

Source : PDB.

Sale of Electricity by BPDB

The bulk electricity sales by BPDB stood at 28,627 MkWh in FY 2010-11. Out of this, 20.83 percent was sold to DPDC, 10.91percent to DESCO, 36.19 percent to REB, 6.44 percent to WZPDC and 25.63 percent to various zones of BPDB's. The bulk sale of electricity is shown in **chart** below.

Graph 10.3: Bulk Sale of Electricity by BPDB as Single Buyer



In FY 2010-11, the distribution zones of BPDB imported a total of 7,329 MkWh of electricity and sold 6,371 MkWh implying a distribution loss of 13.07 percent

System Loss

Various measures are being taken to reduce the distribution system loss. In FY 2009-10, the distribution loss was 13.49 percent which came down to 12.75 percent in FY 2010-11. Year wise distribution system loss since FY 2000.01 is shown in Table-10.4

Table –10.4 Distribution System Loss of BPDB

FY	Distribution
2000-01	25.34%
2001-02	23.92%
2002-03	21.64%
2003-04	20.04%
2004-05	17.83%
2005-06	16.53%
2006-07	16.26%
2007-08	15.56%
2008-09	14.33%
2009-10	13.49%
2010-11	12.75%

Source : Power Division.

Accounts Receivables

Accounts receivables turns out to be a major problem to BPDB. Arrears in the power sector has been reduced from 8.32 equivalent months in FY 2000-01 to 2.22 equivalent months in FY 2010-11. Year wise accounts receivable of BPDB since FY 2000-01 is shown in the following Table.

Table – 10.5: Accounts receivable of BPDB

FY	Accounts Receivable (Equivalent Months)
2000-01	8.32
2001-02	7.74
2002-03	7.13
2003-04	6.45
2004-05	4.12
2005-06	3.83
2006-07	2.76
2007-08	2.45
2008-09	2.44
2009-10	2.40
2010-11	2.22

Source: Power Division

Reforms and Efficiency Enhancement Measures

In order to achieve its overarching goal of providing electricity to all by 2021, the Government has undertaken a number of reform measures, some of which have already been implemented. The implementation status till date is briefly as follows:

- The Electricity Directorate was established in 1948 in order to plan and improve power supply situation of the country. Considering the increasing demand of electricity and its importance in agriculture and industry the Water and Power Development Authority (WAPDA) was created to ensure rapid development of electricity system in 1959. The WAPDA was divided into two parts namely Bangladesh Power Development Board and Bangladesh /.er Development Board by the Presidential Order 59 (PO-59) of 31st May 1972. As a result, Bangladesh Power Development Board was entrusted with the responsibilities of operation, maintenance, and development of generation, transmission and distribution facilities of electricity throughout the country. Under the ongoing reforms, the Bangladesh Power Development Board will be converted into a holding company.
- The Rural Electrification Board (REB) was established in October 1977 for ensuring access to electricity of the the rural population of the country .
- Dhaka Electric Supply Authority (DESA) was created in 1990 for the proper management and electrification in Dhaka city and its adjoining districts.
- DESCO started functioning since 1996 after taking over part of the distribution network of DESA. DESA has been functioning as Dhaka Power Distribution Company (DPDC) since July 2008.Under the Companies Act 1994, Power Grid Company of Bangladesh (PGCB) was created in 1996 to look after the transmission system.West Zone Power Distribution Company Ltd. (WZPDCL) was created in 2002 to look after the distribution system of Barisal and Khulna Zone.
- Electricity Generation Company of Bangladesh (EGCB) was formed as a generation company since 2004. EGCB is now executing 2x120 MW Peaking Power Plant. It has also started construction of 360 MW CCPP Power Plant at *Haripur* and the procurement process of 450 MW CCPP at *Siddirganj* is going on. North West Power Generation Company (NWPGCL) was created in 2008. It has started the construction work of 150 MW Peaking Power Plant at *Khulna* and another 150 MW Peaking Power Plant at *Sirajganj*. NWPGCL has started the procurement process 360 MW CCPP Power Plant at *Bheramara.*
- BPDB is in the process of identifying Strategic Profit Centre (SPC) for its generation and distribution sectors as a new reform initiative.
- South Zone Power Distribution Company (SZPDCL) was created in 2008 to look after the power distribution system of *Chittagong* and *Comilla* zone.
- North-East Zone Power Distribution Company (NEZPDCL) is being created by converting the distribution system of *Mymensing* and *Sylhet* region.
- All distribution units have been brought under the computerised billing system.

Transmission System

Power Grid Company of Bangladesh (PGCB)

Power Grid Company of Bangladesh Ltd. (PGCB) was formed to enhance efficiency and to establish accountability PGCB is responsible for operation, maintenance and development of transmission system

all over Bangladesh. It was created in 1996 as a wholly Government owned company with an authorised capital of Tk.10 billion under the Power Sector Reform Programme of the Government. The total area of transmission system was been transferred to PGCB in 2002.

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 stood at 838 ckt km and 4755 ckt km respectively. The length of 230 kV and 132 kV transmission lines now stands at 2647.3 ckt km and 5892.2 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 enhanced to 4200 km up to June, 2010 after completing the NLDC project., The major parts of the country are now covered by the PGCB optical fiber network.

Box 10.1 : Power Transmission System Expansion activities of PGCB

In order to improve the whole power transmission system, various steps have been undertaken for expansion of power transmission. In this regard PGCB has successfully completed the following components of different projects for expansion of power transmission system :

- *Comilla-Meghnaghat-Haripur 230 kV Transmission Line.*
- *Turn in and out of existing Ghorasal-Haripur 230 kV Line at Rampura.*
- *Hasnabad-Aminbazar (Savar)-Tongi and Haripur-Meghnaghat 230 kV Transmission Line.*
- *Rampura-Gulshan 132 kV Double ckt Cable Line, Khulna Central-Khulna South Double ckt 132 kV Transmission Line.*
- *230/132 kV Substation in Khulna and Barapukuria ,Extension of Joydebpur 132/33 kV Substation with GIS Bay.*
- *Natore-Rajshahi 132 kV Single Circuit Transmission Line (PGCB's own fund).*
- *Barapukuria-Rangpur and Barapukuria-Saidpur 132 kV Transmission Line.*
- *Ashuganj-Sirajganj 230 kV line & Sirajganj switching station.*
- *Construction of Joydevpur-Kabirpur-Tangail 132 kV double circuit Transmission Line.*
- *Khulna-Ishurdi & Bogra-Barapukuria 230 kV double circuit Transmission Line.*
- *Bogra 230/132 kV S/S, Baghabari 230/132 kV S/S, Gallamari 132/33 kV GIS S/S.*
- *Installation of third 230/132 kV Transformer (225 MVA) each at Haripur, Aminbazar & Rampura.*
- *Serajganj-Bogra 230 kV Transmission Line, Sirajganj-Baghabari-Ishurdi 230 kV Line.*
- *Naogaon-Niamatpur 132 kV Transmission Line (PGCB's own fund), Aminbazar-Savar 132 kV Transmission Line (REB's fund).*
- *Niamatpur 132/33 kV S/S (PGCB's own fund), Savar 132/33 kV S/S (REB's fund).*
- *Shahjibazar-Ashuganj 132 kV Transmission Line.*
- *Installation of 450 MVAR Capacitor Banks at 132 level in eight S/Ss.*
- *Magura, Joypurhat, Panchagar, Chuadanga Daudkandi, Brahmanbaria 132/33 kV S/S.*
- *Jhenaidah-Magura, Jhenaidah-Chuadanga, Naogaon-Joypurhat, Thakurgaon-Panchagar132 kV Transmission Line.*
- *Megnaghat S/S to Megnaghat Rental PP, Shiddhirganj to Siddhirganj Dutch Bangla PP.*
- *In-out 132 kV line at Ashuganj-Shahjibazar to B.Baria, Haripur-Daudkandi to Meghnaghat, Megnaghat-Comilla(N) to Daudkandi*
- *Goalpara-Khulna (c) 132 kV U/G Cable.*
- *Noapara PP to Noapara Ss.*

Source : PGCB, Power Division.

Future Development Plan

The Government has already undertaken a massive plan to strengthen the transmission system and fulfill the future demand of electricity with an aim to provide electricity to all by 2020. The following projects are under active consideration of PGCB as included the Prioritised Investment Plan of the Government:

Box 10.2 Projects under considerartion

SI No.	*Name of the Project (Implementation Period)*	*Present Status (Upto June, 2011)*
1.	*Brahmanbaria-Nabinagar-Narsingidi 132 kV Double Circuit Transmission Line. (Sep, 2011- Sep, 2013).*	*DPP prepared and sent to Power Division on 09/11/2010. Project evaluation meeting held on 23/02/2011. As per suggession of the meeting DPP reviewed and sent to Power Division.*
2.	*RPCL Mymensingh-Tangail via Ghatail 132 kV double circuit transmission line and four new 132/33 kV substations (Sherpur, Kulaura, Sunamganj, Sylhet (South)) with interconnecting line. (2011-12 to 2013-14).*	*Pre-DPP sent to Planning Commission from Power Division. Route survey is underway.*
3.	*Eight new 132/33 kV S/Ss with Interconnecting 132 kV line. (2011-12 to 2012-13).*	*DPP prepared and sent to Power Division on 12/12/2010. Project evaluation meeting held on 23/02/2011. Proposed for JICA funding.*
4.	*Hathazari-Sikalbaha- Anowara & Hathazari-Rampur 230 kV Transmission Line. (2012-13 to 2014-15).*	*Pre-DPP submitted and sent to the Planning Commission for approval on 13-06-2010. DPP under preparation. Proposed for JICA funding.*
5.	*Aminbazar-Maowa -Mongla 400 kV & Mongla - Khulna(S) 230 kV Transmission line. (NG3) (2011-12 to 2014-15).*	*Pre-DPP approved in principle. Sent to ERD for exploring funding sources on 09-09-2010 .WB is funding the feasibility study. RFP for the feasibility study issued to six short listed firms on 25th Aug 2011.*
6.	*Anowara - Meghnaghat 400 kV Transmission line (NG4). (2011-12 to 2014-15).*	*Pre-DPP approved in principle. Sent to ERD for exploring funding sources on 13-10-2010. WB is funding the feasibility study. RFP for feasibility study issued to six short listed firms on 25th Aug 2011.*
7.	*Ishurdi-Rajshahi 230 kV Transmission Line. (2011-12 to 2013-14).*	*Pre-DPP approved in principle on 27/09/2010. Financing is awaited.*
8.	*Construction of 230/132 kV Substations at Shyampur, Jhenaidah (Or Jessore), Bheramara and Sripur. (2012-13 to 2014-15).*	*Pre-DPP submitted.*
9.	*Enhencement of Capacity of Grid Substations and Transmission Line (Phase-I). (2012-13 to 2014-15).*	*Pre-DPP prepared and sent to Power Division on 24.04.11.* *DPP submitted to Power Division on 25 August, 2011.*
10.	*Chandraghona-Rangamati-Khagrachari 132 kV Transmission Line. (2012-13 to 2014-15).*	*Pre-DPP submitted. Financing is awaited*
11.	*Khulna(s)-Barisal (N) 230 kV Transmission line project. (2014-15 to 2016-17).*	*Pre-DPP under preparation.*
12.	*Ruppur-Bheramara-Zajira 400 kV Transmission line project. (2014-15 to 2016-17).*	*Pre-DPP under preparation.*
13.	*Ashuganj-Joydebpur 400 kV Transmission line. (2014-15 to 2016-17).*	*Pre-DPP under preparation.*
14.	*Electricity interconnection between Tripura and Eastern Region of Bangladesh. (2011-12 to 2012-13).*	*Pre-DPP submitted for approval.*
15.	*Goalpara-Bagerhat 132 kV 2nd Single Circuit Transmission line. (2011-12 to 2012-13).*	*PCP prepared and will be submitted to PGCB board for approval.*

Source : PGCB, Power Division.

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 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 2009-10 stood at 7,37,997 within the jurisdiction of DPDC and it increased to 7,35,372 in the FY 2010-11. Maximum system demand was 1,169.90 MW in the FY 2009-10 which rose to 1,215.66 MW in FY 2010-11. The following table shows year-wise status of the number of customers and maximum demand

Table-10.6: Year wise number of customers and maximum demand

FY	Number of Customers	Maximum Demand (In MW)
2006-07	610383	1008.73
2007-08	655908	1114.22
2008-09	700799	1137.65
2009-10	737997	1169.90
2010-11	735372	1215.66

Source: Power Division.

Reform Activities and Good Governance

From the very beginning, the company undertook different measures to enhance its customer-service to make the company profitable. Following 'Zero Tolerance' principle against corruption, the company started addressing the governance related issues. In tandem, it also infused dynamism in the style of operation. DPDC started two new programmes namely Customer Support Service (CSS) and Distribution Support Service (DSS) to upgrade the level of customer service.

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

Dhaka Electric Supply Company Ltd. (DESCO)

As part of on-going Power Sector Reforms 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 as a distribution company in 1996 under the Companies Act 1994 with an authorised capital of Tk. 5.00 billion. The operational activities of DESCO at the field level commenced in 1998 with the taking over of the electric distribution system of Mirpur area from Dhaka Electric Supply Authority (DESA) having a consumer strength of 71,161 and a demand load of 90 MW. In the subsequent years of successful operation and performance, the operational area of DESCO was expanded by inclusion of *Gulshan* Circle in April, 2003 and *Tongi Pourashava* Area in March, 2007. Recently *Purbachal* Model Town a Rajuk project, situated on the east side of the *Balu* River and adjacent to *Dakkhinkhan* area, has also been included under the operational area of DESCO. As of 30th June, 2011, the total consumer strength stands at 4,49,063 with a maximum load demand of 640 MW.

Highlights of Technical and Commercial Operations

Technical Operations

Maximum demand for electricity in the operational area of DESCO was 545 MW in FY 2008-09 while in FY 2009-10, it stood at 622 MW. Maximum demand in FY 2010-11 was 640 MW. Expansion of 33 kV underground lines has been continuing. In FY 2010-11, underground line (33 kV) installed was 215.88 km which was 204.37 km in the previous year (2009-10). On the other hand, 1017.86 km 11kV overhead line and 350.12 km 11kV underground lines were installed in FY 2009-10 which stood at 1044.55 km and 360.54 km respectively in FY 2010-11. Similarly, 1671.88 km Low Tension (LT) line in FY 2009-10 has been expanded to 1717.35 km in FY 2010. DESCO distributed as many as 4814 transformers in FY 2009-10 while in FY 2010-11 the number of transformers distributed was 4938. It may be mentioned that, the installed capacity of 33/11kV Sub-station of DESCO was 880/1232 MVA in FY 2010-11 while it was 770/1078 MVA in FY 2009-10.

Table 10.7 shows the Technical Operations of DESCO during FY 2005-2006 to 2010-11:-

Table 10.7: Technical Operations of DESCO

Sl No	Description	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
	1	3	4	5	6	7	8
01	33/11kV Sub-stations (No.)	16	19	21	21	22	22
02	Capacity of 33/11kV Sub-stations (MVA)	620/868	680/952	760/1064	760/1064	770/1078	880/1232
03	Maximum Demand (MW)	397.60	451	505	545	622	640
04	33kV Overhead Line (KM)	76.70	82.80	82.80	82.80	82.80	82.80
05	33kV Underground Line (KM)	143.80	182.20	182.20	184.84	204.37	215.88
06	11kV Overhead Line (KM)	720	860.40	884.00	959.25	1017.86	1044.55
07	11kV Underground Line (KM)	262	314.35	317.10	317.10	350.12	360.54
08	LT Line(KM)	1250	1473.25	1521	1591.39	1671.88	1717.35
09	Distribution Transformer(No.)	4106	4316	4497	4563	4814	4938

Source : DESCO.

Commercial Operations

The import and sale of energy by DESCO in FY 2008-09 were 2742.92 million kilo watt hour (MKWh) and 2474.51 MKHw which stood at 2933.72 MKHw and 2673.69 MKHw in FY 2009-10 while in FY

2010-11, the import and sale of energy rose to 3122.75 million kilo watt hour and 2848.38 million kilo watt hour respectively. During this period, the number consumers also increased. In FY 2008-09, 2009-10 and 2010-11 the numbers of consumers of DESCO were 4,15,842, 4,46,129 and 4,49,063 respectively.

In FY 2010-11, a total of Tk. 12270.85 million was collected against the sales target of Tk. 12400.18 million and the Bill-Collection ratio between energy sold (MTk.) and amount collected (MTk.) rose to 98.96 percent. On the other hand, in FY 2009-10, Tk. 10774.84 million was realized against the sales target of Tk. 10911.20 million and the Bill-Collction ratio rose to 98.75 percent.

System loss is a key performance indicator of energy distribution entities and is determined by the quantity of energy purchased and sold. Necessary steps have been taken by DESCO to reduce the overall system loss. In FY 2010-11 the system loss of DESCO was 8.79 per cent which was 8.86 per cent in FY 2009-10. Table 10.8 shows the commercial operations of this entity during FY 2005- 06 to 2010-11:-

Table-10.8 : Commercial Operations of DESCO:

Sl No.	Description	2005-06	2006-07	2007-08	2008-09	20-2010	2010-11
	1	3	4	5	6	7	8
01	Energy Import						
	(MKWh)	2023.22	2191.46	2573.76	2742.96	2933.72	3122.75
	(MTk.)	4390.39	4946.36	6151.29	7117.53	7845.65	8801.83
02	Energy Sales						
	(MKWh)	1695.55	1897.00	2293.03	2474.51	2673.69	2848.38
	(MTk.)	6280.06	7219.58	9094.19	9888.30	10911.20	12400.18
03	System Loss (%)	16.20	13.44	10.91	9.79	8.86	8.79
04	Collection Amount (MTk.)	6207.45	7705.86	9095.30	9708.62	10774.84	12270.85
05	Collection Ratio (%)	99.11	104.40	100.01	98.18	98.75	98.96
06	C. I. Ratio (%)	83.06	90.37	89.10	88.57	90.00	90.26
07	Consumers	281960	347614	385037	415842	446129	449063

Source : DESCO

E-Governance

To keep pace with the modern technological advancement in IT (Information Technology) and to make the utility management more user-friendly, DESCO Management decided to launch e-governance programme with a unified approach. Activities under DESCO like (i) One Point Service Complaint (ii) New Connection (iii) Monthly Bill Collection (iv) Miscellaneous Bill Collection (v) DESCO Website and E-mail Communication. Inter Office Wide Area Network (WAN) Connectivity has already been developed and implemented. Besides this (i) Store Management (ii) Control Room and Sub-station Maintenance (iii) Personal Management (iv) Human Resource Management and Development and (vi) Call Centre are in the process of being included under e-governance programme. Citizen's Charter has also been uploaded in DESCO website and now any consumer may check the status of his/her bill and get to know about the load shedding schedule from this website.

Solar Power Utilisation

The concern about depleting energy reserve in the world, energy security and climate change has led to growing demand for solar power. Solar energy can play a key role in producing local, clean and inexhaustible energy to cater the rising demand of global energy needs. In Bangladesh, both the Government and private sectors are working with much enthusiasm to popularise the solar technology to address the prevailing energy crisis. DESCO has given special attention to this programme and opened solar energy advisory cell at each Sales and Distribution Division and centrally at head office. Government's instructions regarding installation of solar system in case of new electricity connection is being properly complied by DESCO. Arrangements have been made to display the solar power use system at the Head Office and all Sales and Distribution offices. Up to June'11 about 300 KW solar systems have been installed at consumer premises in DESCO area for different classes of consumers.

Rural Electrification Board (REB)

Rural Electrification Board was established in 1977 to ensure access to electricity by the rural population in the country.Since its inception, the rural electrification programme in the country has shown remarkable progress. With a network of 70 PBSs, the Board has so far constructed 2,27,605 km distribution lines provided a total 83,62,097 connections in 48,770 villages.. Of the total connections, as many as 72,06,182 connections are domestic, 1,94,681 irrigation, 8,13,057. commercial, 1,34,102. industrial and 14,075 up to June 2011. The following Table-10.9 shows the target and achievement in terms of construction of distribution lines and the coverage of consumers during FY 2000-01 to 2010-11 of the Rural Electrification Programme.

Table - 10.9 : Physical Target and Achievement

FY	Distribution Lines (km)			No. of Consumers Connected		
	Target	Achievement	Variance (-) / (+)	Target	Achievement	Variance (-) / (+)
2000-01	13750	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
2010-11	2095	307	-2406	180000	259548	-201869
Total	**107027**	**106624**		**4938275**	**5752529**	

Source : REB.[Variance = Current year Achievement – Previous year Achievement]

Purchase and sale of energy, accounts receivable & accounts payable and collection of bills

Purchase and sale of energy

Rural Electrification Board purchases energy from PDB and sells to its consumers (household, industry, agriculture, commercial and others). The Table 10.10 shows the statistics of purchase and sale of electricity of REB during FY 2010-11:

Table 10.10: The Statistics of Purchase and Sale of Electricity among the Consumers by REB.

Year/ month	Energy purchased (MWH)		Energy sold/consumed (MWH)						Avg. System loss of 70 PBS (%)	
			Domestic	Industry	Commer - cial	Agricul - ture	Others	Total		
	Grid Meter	Sub-station							Grid Meter	Sub-station
2010-11										
July' 2010	996678	961219	469925	242411	74279	26131	1194	813960	18.33	15.32
Aug' 2010	1066690	1026311	496139	246330	75888	35430	1205	855011	19.84	16.69
Sept' 2010	1066740	1025672	592094	209119	85423	27560	1278	915467	14.18	10.74
Oct' 2010	991368	960695	521449	245723	79515	24090	1230	872110	12.03	9.22
Nov' 2010	834321	814456	454687	208599	79055	24212	1239	767783	7.98	5.74
Dec' 2010	860922	835642	396648	255055	71282	27882	1171	751946	12.66	10.02
Jan'2011	973433	940488	393198	257751	70905	137506	1166	860526	11.60	8.50
Feb'2011	994332	963723	369060	223501	66918	236808	1135	897422	9.75	6.88
Mar'2011	1135031	1094512	345226	251188	67250	273462	1102	938234	17.34	14.28
April'2011	1127408	1084950	411396	258958	76401	197644	1191	945590	16.13	12.84
May'2011	1059770	1021719	484026	289508	84882	44105	1249	903770	14.72	11.54
June'2011	1127646	1083159	568159	271749	90225	21328	1277	952724	15.51	12.04

Source: REB.

Accounts Receivable and Accounts Payable

Table 10.11 shows the payable amount of bill to PDB and receivable amount of bill from the consumers.

Table 10.11: The Statistics of Receivable and Payable Amounts in Regard to Purchase and Sale of Electricity by REB.

FY	Accounts receivable (Months)	Accounts receivable (Tk.000)	Aging of Accounts Payable (PDB Bill Outstanding) (12 Month avarage) (Tk. 000)
2000-01	2.23	1864124	*580795
2001-02	2.21	2349959	767100
2002-03	1.92	2687177	1049579
2003-04	1.81	3022224	1213820
2004-05	1.85	3446585	1324081
2005-06	2.00	4288939	1528566
2006-07	1.72	3743158	1543398
2007-08	1.54	3765651	1750170
2008-09	1.55	4081795	2108864
2009-10	1.53	4770491	2474828
2010-11	1.48	5232594	2726788

*** Total Cost of Power Purchase.**

Bill collection

Bill collection rate of REB in FY 200-10 was 97.95 percent. This rate was 98.44 percent in FY 2010-11. The following Table 10.12 shows the performance of electricity bill collection by REB during FY 2000-01 to 2010-11.

Table 10.12: Statistics of bill collection by REB.

FY	Amount of Bill (Lakh Taka)	Receivable Amount (Lakh Taka)	Percentage of Bill Collection
2000-01	108017.95	102686.66	96%
2001-02	112919.90	110876.04	98%
2002-03	167566.68	160047.78	98%
2003-04	200226.60	196222.068	98%
2004-05	224044.32	219563.43	98%
2005-06	257356.92	245981.74	95.58%
2006-07	261319.08	263200.58	100.72%
2007-08	292830.72	293592.07	100.26%
2008-09	316249.10	292846.90	98.82%
2009-10	374598.84	366919.56	97.95%
2010-11	424741.20	418115.24	98.44%

Information Technology Development and Expansion by REB

The Government has taken an initiative to conduct a feasibility study to establish Countrywide Fibre Optic Network by a committee formed for the purpose to conduct the study. As per recommendations of the committee, steps have been taken to set up Fiber Optic Network through joint investment by using the existing infrastructure of power sector entities. Apart from the establishing the Optic Fibre Network computerized systems have already been introduced in goods inventory, billing systems of the PBSs.

Graphic Information System (GIS) is being used in some PBSs and by phases it will be introduced in all PBSs to develop the standard of consumers' services. Moreover tender notice, appointment notice and others information are uploaded in REB's own website www.reb.gov.bd regularly.

On going projects under Rural Electrification Board

In RADP of FY 2010-11, REB has been provided with an allocation of Tk 40555.13 lakh (of which Tk. 30565.72 lakh in local currency and Tk. 9989.41 lakh in Project aid) for implementation of 10 investment projects. In the remote areas where electricity cannot be distributed in conventional way, REB has implemented 3 renewable energy projects to provide domestic connection through Solar Home Systems and so far as many as 14408 of domestic connections have been given. REB through to PBSs purchases electricity from PDB and distributes it to the consumers.

Private Investment in Power Sector

Government encourages private sector participation in power sector to ensure wider access to electricity..As a result, the private sector is increasingly getting involved in power generation programme of the Government. Currently, a number of projects are being implemented under several initiatives like public-private partnership (PPP), IPP and rental power in private sector. As well as there have been initiatives to generate electricity by using renewable energy such as:

- Installation of 14 thousand solar home systems by REB.
- Installation of 21.20KWp (Kilowatt peak) solar photovoltaic (PV) system in the Prime Minister's office.
- installation of 9 lakh solar home system in rural areas by different NGO's with the help of IDCOL(Infrastructure Development Company Limited)
- Establishment of 100 MW (offshore) wind power plant at *Anowara* in *Chittagong* and 10-15 MW capacity solar power plants in 4 different places of the country .
- In order to manufacture solar panels in the country, IDCOL takes the initiative to set up solar power plants as many as possible.

Oil, Gas and Mineral Resources Sector

The main purpose of oil, gas and natural resource sector is to meet growing energy demand of the country by undertaking enhanced exploration activities based on modern seismic survey like 3D survey and development and appraisal of oil and gas fields. Besides strengthening exploration and development of gas fields, the sector strategy also aims to reduce extreme dependence on natural gas through diversification of energy- mix, balanced and synchronized development of gas production, transmission and distribution activities, encourage participation of private entrepreneurs in oil and gas exploration, production, and distribution.

Natural Gas

Reserves

In Bangladesh, natural gas is one of the important sources of energy that accounts for 75 percent of commercial energy of the country. As of now 23 gas fields have been discovered in the country. The estimated recoverable proven and probable reserve of the 23 gas fields is 20.605 TCF. Out of which, as of June 2011, a total of 9.788 TCF gas has already been produced leaving only 10.817 TCF (Table-10.13).

Table 10.13: Bangladesh Gas Reserves

In Billion Cubic Feet (BCF)

Gas field	Recoverable Reserve (Proved+ Probable)	Production July 10- June 11	Cumulative Production Up to June 2011	Remaining Recoverable Reserve (Proved + Probable)
Producing :				
Bakhrabad	1,049.00	12.21	717.30	331.70
Habiganj	3,852.30	93.40	1,796.70	2055.60
Kailashtilla	1,903.30	31.39	530.40	1372.90
Rashidpur	1,401.20	17.78	483.90	917.30
Sylhet	478.70	3.80	193.40	285.30
Titas	5,127.50	150.33	3,294.00	1833.50
Narsingdi	215.10	11.19	122.10	93.00
Meghna	119.60	2.88	38.70	80.90
*Sangu**	635.50	6.47	477.80	157.70
Salda Nadi	116.10	2.48	64.10	52.00
Jalabad	836.50	50.28	619.00	217.50
Beani bazar	170.20	4.36	67.00	103.20
Fenchuganj	282.80	8.50	77.90	204.90
Moulavibazar	359.60	17.74	179.00	180.60
Feni	129.60	0.00	62.40	67.20
Bibiyana	2,400.80	253.40	854.20	1546.60
Bangura	309.00	40.37	157.90	151.10
Shahbazpur	465.60	2.34	4.90	460.70
Not in production :				
Begumganj	32.70	0.00	0.00	32.70
*Kutubdia**	45.50	0.00	0.00	45.50
Semutang	150.30	0.00	0.00	150.30
Production suspended:				
Chhatak	473.90	0.00	26.50	447.40
Kamta	50.30	0.00	21.10	29.2
Total	20,605.10	708.92	9788.30	10816.80

Source: Petrobangla , Energy and Mineral Resources Division. * Offshore field

Natural Gas Production and Sectorwise Consumption

Currently, 79 wells in 18 gas fields are in production. These are: *Titas, Bakhrabad, Habiganj, Rashidpur, Kailashtilla, Sylhet, Narsingdi, Meghna, Saldanadi, Fenchuganj, Sangu, Jalalabad, Beanibazar, Feni, Moulavibazar, Bangura, Shahbazpur* and *Bibiyana* gas fields. A total of 703.60 billion cubic feet (BCF) gas was produced in FY 2009-2010 while in FY 2010-11, a total of 708.92 billion cubic feet (BCF) gas was produced. Year-wise/sector-wise natural gas production and consumption are shown in Table 10.14:

Table 10.14: Production and Consumption of Natural Gas by Sector

In Billion Cubic Feet (BCF)

Fiscal Years	Produc-tion	Sectors									Total Sales
		Power	Fertilizer	Industry	Captive Power	Tea Estates	B. Fields (seasonal)	Commer-Cial	Domestic	CNG	
1991/92	188.48	88.10	61.60	13.40	-	0.70	0.20	2.90	11.60	0	178.50
1992/93	210.98	93.30	69.20	15.20	-	0.70	0.20	2.40	13.50	0	194.50
1993/94	223.76	97.30	74.50	20.26	-	0.70	1.10	2.87	15.40	0	212.13
1994/95	247.38	107.40	80.50	24.24	-	0.60	1.10	2.88	18.86	0	235.58
1995/96	365.51	110.90	90.98	27.31	-	0.72	0.99	3.00	20.71	0	254.61
1996/97	260.99	110.82	77.83	28.62	-	0.71	0.48	4.49	22.84	0	245.79
1997/98	282.02	123.55	80.07	32.32	-	0.74	0.39	4.61	24.89	0	266.57
1998/99	307.48	140.82	82.71	35.79	-	0.71	0.35	4.71	27.02	0	292.11
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	11.99	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	283.146	64.719	64.719	118.811	0.804	0.00	8.1192	82.687	39.33	710.229
2010/11	708.9	273.8	121.2	62.8	121.5	0.8	0	8.5	87.4	38.5	714.4

Source: Petrobangla , Energy and Mineral Resources Division

Demand for Natural Gas

It appears that sector wise natural gas demand is on the increase. The total demand for gas in FY 2009-10 stood at 732.4 BCF whereas it was 872.8 BCF in FY 2010-11 which was 19.17 percent higher compared to the demand in the previous year. In FY 2009-10 , the demand from the power sector was 283.10 BCF which is the highest among other sectors. The demand for natural gas consumption in power sector (Grid+Non-grid) in FY 2010-11stood at 395.00 BCF. Sector-wise demand for gas during FY 2010-11 to 2014-15 is shown below in Table 10.15:

Table 10.15: Sector-wise average gas demand (2010-11 to 2014-15)

In Billion Cubic Feet (BCF)

Sector			Fiscal Year		
	2010-11	2011-12	2012-13	2013-14	2014-15
Power	273.8	324.5	350.5	378.5	416.4
Captive*	121.2	164.0	188.6	216.9	234.3
Fertilizer	62.8	94.0	94.0	94.0	94
Industry	121.5	184.8	214.4	246.5	258.8
Commercial	8.5	10.8	11.7	12.6	13
Brick Field (Seasonal)	0	0	0.0	0.0	0
Domestic	87.5	111.4	124.8	139.8	148.2
Tea-Estate	0.8	1	1.0	1.0	1
CNG	38.5	51.4	56.5	113.0	120.9
**System Loss	–	20	20	20.0	20
Total	**708.9**	**962.0**	**1061.5**	**1222.4**	**1306.5**

Source: Petrobangla, Energy and Mineral Resources Division * Non-grid. **Including own use.

To meet the increasing demand for gas, it is important to discover, explore and develop new gas fields. The present Government has, therefore, adopted various plans for the gas exploration since its assumption of office. About 95 mmcfd gas is expected to be added through drilling of 5 exploration wells at *Kapasia, Srikail, Sundalpur, Sunetra* and *Mobarakpur* by BAPEX. Moreover, in order to increase the gas supply rapidly under a short programme, a target has been fixed by Petrobangla to add 135 mmcfd gas to the national grid by work over of 4 development wells at Titas Gas Field and work over of 1 well at *Rashidpur* gas field. Under the medium (June 2013) and long term planning (December 2015) a total of 2800 mmcfd gas will be added to the national gas grid including 500 mmcfd gas through importation of LNG by 2013.

In FY 2010-11, under oil, gas and mineral resources sector, a total of 39 projects were under implementation by Petrobangla and its companies. Out of these projects, 8 projects were meant for well drilling programme (exploration and development), 7 projects for gas transmission program (including installation of gas compressor stations), 4 projects for gas distribution program, 2 projects to conduct 3D

and 2D seismic surveys. In FY 2010-11 a project for special compensation for rehabilitation of affected people of *Barapukuria* Coal Mine area has been completed.

LPG

With a view to reducing the import of fuel and produce pollution-free fuel, an LPG plant was installed at *Kailashtila* in *Sylhet* in 1998. In November, 2007 another NGL/Condensate fractionation plant was commissioned at the same premises. By using the existing facilities in these plants, about 23 metric tonnes of LPG are being produced per day through processing about 54 metric tonnes NGL.

Condensate

Condensate(crude oil) produced as by-product in the gas fields of *Sylhet* region are being transported to the *Ashugonj* 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 Limited for processing. Initially condensate delivery quantity was 50-60 lakh litre per month. Now the quantity has reached to 220 – 250 lakh litre. In FY 2010-11, it handled the processing of 80,712 kilolitre condensate.

CNG

In FY 2010-11, as many as 38.50 bcf gas was consumed in this sector. Consequent on the promotional activities of this kind of fuel (CNG) and its energy saving nature vehicle conversion to CNG is increasing day by day. In FY 2001-02, the number of CNG run vehicles stood at as many as 6734 whereas it reached to 197493 in FY 2010-11.

6 percent of the total natural gas was used as Compressed Natural Gas (CNG) in FY 2010-11. 546 CNG filling stations and 178 CNG conversion workshops are in operation by the public and private entrepreneurs. These CNG Stations are consuming approximately 101 MMCM gas monthly which is equivalent to more than 11 (eleven) crore litres.

Coal

In Bangladesh, the deposit of coal is about 2,700 million tonnes which is equivalent to 37 tcf gas in 5 coal fields so far discovered, namely *Barapukuria, Khalashpir, Phulbari, Jamalgonj* and *Dighipara*. The targetd commercial production capacity of *Barapukuria* Coal Mine Company Ltd. is one million metric tonne per year. At present it is producing average 3,000 metric tonnes coal per day. Almost 65 percent of the production is being used by the coal fired 250 MW *Barapukuria* Thermal Power Station operated by Bangladesh Power Development Board (BPDB). Remaining 35 percent is being used in brick fields and for other domestic purposes which have a positive impact on reduction of deforestation. A total of 37.50 lakh metric tonnes of coal has been extracted from the *Barapukuria* Coal Mine since its inception to June 2011.

Hardrock

The annual demand for hardrock in Bangladesh is about 60-70 lakh metric tonnes, out of which *Madhyapara* Hardrock Mine went into operation since 25 May 2007 with the targeted capacity of 16.50 lakh metric tonnes per year (5,500 tonnes per day). Since inception to June 2011 about 16 lakh metric tonnes of hardrock was extracted from *Madhyapara* Hardrock Mine. The extracted hardrock is being used for various construction works like flood control, coastal and town protection, embankment construction and maintenance of bridges, roads, highways, railways, river training, high rise buildings and other construction works.

Petroleum Products

Bangladesh Petroleum Corporation (BPC) imports all types of petroleum products like crude oil, refined petroleum products and furnace oil to meet the country's growing demand as well as to ensure the energy security of the country. It develops and maintains facilities to store sufficient petroleum products. It is the responsibility of this entity to keep uninterrupted supply, distribution and marketing of petroleum products throughout the country .The total demand for refined oil in the country is about 4.87 million metric tonnes which is increasing at about 5 percent per annum. Total storage capacity of oil in the country is about 0.9 million metric tonnes. BPC has taken up a BMRE project of Eastern Refinery Limited (ERL) to enhance its processing capacity of crude oil. Another very important project has been taken up to establish a Single Point Mooring (SPM) to discharge crude and refined oil from deep sea near *Kutubdia* island. Information on imported crude and refined petroleum products from 1998-99 to 2010-11 is shown in the following tables:

Table: 10.16: Import of Crude Oil

Financial Year	Quantity (Metric ton)	C&F Value/Million US$	Crore Take
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	573.65	3901.16
2006-07	12,11,037	604.73	4196.85
2007-08	10,40,084	762.08	5288.85
2008-09	8,60,877	494.44	3,431.40
2009-10	11,36,567	675.51	4,701.54
2010-11	14,09,302	1004.535	7267.81

Source: Energy and Mineral Resources Division.

Table: 10.17: Import of Refined Petroleum Products

Financial Year	Diesel, Kerosene, Octane & Jet A-1		Lubricating Base Oil	
	Quantity (Metric tonne)	Value (Crore Taka)	Quantity (Metric tonne)	Value (Crore Taka)
1998-99	22,21,872	1350.10	39,961	45.62
1999-00	18,23,400	2,021.43	50,229	86.41
2000-01	20,68,913	2,999.20	29,918	69.34
2001-02	20,72,300	2,535.62	15,316	30.59
2002-03	22,13,899	3,319.35	1,911	5.10
2003-04	22,62,348	4,015.81	6,516	18.38
2004-05	26,91,750	7,213.88	10,189	38.14
2005-06	23,80,582	9,382.77	5,137	35.53
2006-07	25,36,535	10,443.20	4,277	25.13
2007-08	22,27,753	14,343.04	5,006	29.94
2008-09	25,07,819	10,945.24	4,828	23.63
2009-10	26,38,055	12,024.18	7,248	52.03
2010-11	32,31,011	19,804.77	4,745	43.75

Source: Energy and Mineral Resources Division

It is to be mentioned that BPC has imported 230,431 metric tonnes High Sulpher Furnce Oil with C&F value US $ 153.26 million i.e. Tk. 1123.17 crores during FY 2010-11 to feed the Rental, Quick Rental and Peaking Power Plants for generation of electricity.

Financial Year	High Sulpher Furnace Oil 180 CST	
	Quantity (Metric Tonne)	Value (Crore Taka)
2010-11	230,431	1123.17

Source: Energy and Mineral Resources Division

Subsidy for Petroleum Products

Bangladesh Petroleum Corporation (BPC), imports crude and refined petroleum products every year as per demand in the country. The procurement price of crude and refined petroleum products fluctuates in the international market. Therefore, if the oil price increases in the international market, BPC has to incure losses as domestic sales price (Transfer Price) is lower than the purchase cost.

BPC has incurred a loss to the tune of Tk. 9100.00 crore (provisional) during FY 2010-11. However, the corporation contributed TK. 3100 crores to the Government exchequer as duties and taxes. The loss of BPC due to price differentials in international and domestic markets and its contribution to the Government exchequer is shown in the Table 10.18:

Table: 10.18: Loss of BPC and its Contribution to the Government Exchequer

(In Crore Taka)

Financial Year	Contribution to the Government exchequer	Financial Loss
2002-03 (Audited)	2766.13	7.61
2003-04 (Audited)	3087.28	958.93
2004-05 (Audited)	2458.95	2317.88
2005-06 (Audited)	2620.26	3337.78
2006-07 (Audited)	2756.00	2314.63
2007-08 (Audited)	3304.00	7050.30
2008-09 (Audited)	1909.00	1022.63
2009-10 (Audited)	2324.00	2571.22
2010-11 (Provisional)	3100.00	9100.00

Source: BPC, Energy and Mineral Resources Division.

M**ineral Resources (except oil and gas) Investigation, Exploration and Evaluation**

Geological Survey of Bangladesh (GSB), an attached department to the Energy and Mineral Resources Division of the Ministry of Power, Energy and Mineral Resources, is entrusted with the tasks of exploration, discovery and evaluation of mineral deposits (except oil and gas), and research in different disciplines of geosciences. GSB provides scientific advices to the Government and non-government agencies, policy makers and planners associated with various infrastructural development such as urbanization and industrialization; construction of dams, bridge, roads; escavations of canals etc. in respect to combating natural and man-made hazards. Assessment of natural hazards and awareness building among the mass population to reduce the damage caused by those natural calamities are also the routine work of GSB.

Digital Elevation Model (DEM) and Digital Terrain Model (DTM) database have been prepared by using advanced LiDAR (Light Induced Detecting Airborne Raddar) technology for High Resolution Terrain Modeling and Slope gradient of North-Eastern Part of Greater Dhaka City. Detailed geological mapping of 260 sq. km as well as 3-Dimensional Geological Modeling of about 40 sq. km have been completed under the 2nd technical assistance project. Under the 3rd technical assistance project an MoU has been signed in January, 2010 between GSB and Norwegian Geotechnical Institute to work on Geo-hazards especially on landslide, earthquake and compactness of different dams. Early warning system of landslides has already been installed in *Chittagong* University in January, 2011 under this project.

Geological Survey of Bangladesh is now working in *Rangpur*, *Dinajpur*, *Tangail*, *Mymensing, Bogra, Rajshahi, Cox's Bazar* and *Tcknaf* for Microseismic Zonation Mapping combined with Comprehensive Disaster Management Programme (Phase-II) under the Ministry of Food and Disaster Management. There is plan to install five GPS Stations in *Dhaka, Shalna (Gazipur), Mymensing, Haluaghat (Mymensing)* and *Khulna* in the 1st phase for earthquake disaster management to assess the neo-tectonic activities about earthquake in and around Bangladesh.

A program has been undertaken to investigate in details (including area, thickness, quality, reserves, mineability and uses of peat deposits) in an area of 4000 hectares at Bijoynagar Upazila under the district of Brahamnbaria. .

Technical Arm of Energy and Mineral Resources Division (EMRD)

Hydrocarbon Unit provides technical advice to Energy and Mineral Resources Division for the development of Oil, Gas and Mineral Resources sector. Hydrocarbon Unit also assists in providing comments to international and regional organizations on various subjects of the energy sector. A mini-data bank in the Hydrocarbon Unit preserves some selected data of the hydrocarbon sector like gas reserve, undiscovered gas resources and gas production and consumption. Hydrocarbon Unit publishes monthly reports and annual reports on Gas Reserve and Production. Hydrocarbon Unit started functioning as a technical assistance project under the grant financing by the Royal Norwegian Government in July 1999 and continued up to June 2005. Thereafter the phase-II of the project started again under Norwegian grant being administered by the Asian Development Bank. This phase will continue up to December 2012. Meanwhile in May 2008, Hydrocarbon Unit has been brought under the regular establishment of Energy and Mineral Resources Division .

Under the ongoing phase of the project, a range of activities are being carried out to work out possible procedures to ensure optimal utilization of by-product of natural gas through International Consulting Firms. These include, *inter alia*, setting up of Straddle Plant; updating of resource assessment and reserve estimation; supervision and monitoring of Production Sharing Contract (PSC) and other Contracts; Petroleum Refining and Marketing Management; Gas Production Augmentation; Mines and Minerals Development, drawing Coal Development Strategy, CBM, UCG and Hard Rock Development and reviewing the existing Mining Act, Rules and Regulations.

Hazard Control and Safety Management

Department of Explosives is engaged in different types of activities in respect of hazard control and safety management under the Petroleum Act, the Explosives Act and the rules framed thereunder.The important activities carried out during FY 2010-11 include import of 28,032 LPG cylinders and issuance of storage licenses for as many as 128 LPG cylinders, issuance of import permit/license in favor of nationalized gas field companies, *Maddhyapara* Hard Rock Mining Co., *Barapukuria* Coal Mining Company and other international oil companies for the import of 50 metric tonne of Power Gel for four mine fields, as many as 5370 pieces of Charges and 33,690 pieces of detonators. As many as 31 Petrolium Storage permits/licenses have been issued in favour of Rental Power Plants run by diesel/furnace oil. Other activities of the Department of Explosives were : approval of results of as many as 85 Leak Tests carried out for ensuring safety of high pressure gas pipelines aiming at implementing the gas transmission expansion programmes, test of as many as 8583 petroleum carrying/storage tanks of different petroleum oil tankers and ships before scraping and issuance of "Gas Free" certificates in favour of them, provided expert opinion to the Honorable Court on as many as 247 of bomb/cocktail/improvised devices against the cases framed under the Explosive Substance Act.

Regulatiory Functions in Energy Sector

Bangladesh Energy Regulatory Commission(BERC) has been functioning with an aim to expedite and accelerate a long term development in energy sector. With that aim, BERC has been rendering its services in creating an atmosphere conducive to private investment in the generation and transmission of electricity, transportation and marketing of energy (gas resources and petroleum products). BERC also provides services in ensuring transparency in the management, operation and tariff determination process in these sectors; protecting consumers' interest and promoting the creation of a competitive market.

BERC organizes Outreach Programmes in different regions of the country on different topics such as, standard of management by the utility companies in rendering services, exchange of information between consumers and utility companies, mitigation of consumers' complaints. For the administration of Gas Development Fund, established in 2009 through a Tariff Order that increased the retail gas price by 11.22%, BERC issued a guideline namely 'Gas Development Fund Policy' in 2011. According to the 'Policy Guidelines for Enhancement of Private Participation in the Power Sector, 2008' BERC set 'Benchmark Indicative Cost and Pricing' in regard to the use of furnace oil, duel fuel (gas and furnace) and coal in the Merchant Power Plants. This will enable the investors to understand the tariff type and as a result, this will pave the way for establishing Merchant Power Plant in the country. Besides these, 'Bangladesh Energy Regulatory Commission (Natural Gas Distribution Tariff) Regulations 2010' and 'Bangladesh Energy Regulatory Commission (Natural Gas Transmission Tariff) Regulations 2010' were published the Gazette in the year 2011.

Training Activities

Bangladesh Petrolium Institute(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 implanting improved data management programmes. 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 (June 2011) BPI has organized 305 training course / workshops / seminars and provided training to 5364 persons. During the fiscal year 2010-11 BPI organized 25 courses of various duration (on oil/gas exploration, drilling, production, refining, distribution, marketing, etc.) and provided training to 175 persons through these courses.