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 2011-12, the contribution of power sector to GDP was 1.45 percent at constant price while the contribution from Natural Gas and Crude Petroleum ' and Coal and other Mineral resources together was estimated at 1.26 percent. Both the sectors posted growth rates of 15.96 percent and 6.25 percent respectively in FY 2011-12. 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 plans 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. The total power produced in the country is not enough to ensure adequate access to electricity. As of now, only 53 percent of the total population has access to electricity.

Per capita electricity generation is only 272 kwh, which is very low compared to that of 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 plans 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 16,000 MW from both public and private sectors during the period from 2012 to 2016 by using natural gas based power plants and also by using liquid petroleum, coal, duel fuel, renewable energy for scaling up electricity generation under various programmes. It is to be noted that in the Election Manifesto of the present Government, a target was set to generate 5,000 MW by 2011 which has already been

achieved. In order to realise the goals set out in the election manifesto, the Government has planned to generate additional 15,000 MW electricity by 2016 under short, medium and long-term plans and is committed to make electricity available to all by 2021. Up to June 2012, a total of 8,725 circuit kilometres of transmission lines and about 281,123 kilometres of distribution lines with necessary infrastructure have been constructed. To transmit power from the new power plants around 3,500 circuit kilometres of transmission lines and 60,000 kilometres of distribution lines will require to be constructed by 2015.

Generation Capacity and Demand

In FY 2010-11, the total installed generation capacity stood at 8,100 MW, of which the share of public sector (including REB) was 4,329 MW and that of private sector was 3,771 MW. In FY 2011-12, it was 8,625 MW of which the capacity of public sector stood at 4,915 MW while that of private sector was 3,710 MW. 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 by shortage of gas supply. As of 22 March 2012, maximum actual generation stood at 6,066 MW.

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

Chart 10.1 (a)

Chart 10.1 (b)

Ref: BPDB

Power Generation

During FY 2011-12, a total of 35,118 million-kilowatt hour (MkWh) net energy (14,673 MkWh in public sector and 16,682 MkWh in private sector including SPP under REB) was generated. Of the total generation, the public sector power plants generated 53 percent while private sector

generated 47 percent. The share of gas, hydro, coal and oil based energy generation was 79.15 percent, 2.21 percent, 2.52 percent and 16.12 percent respectively. On the other hand, in FY 2010-11, 31,355 million-kilowatt hour (MkWh) net energy was generated i.e. energy growth in FY 2012 was 12 percent Net energy generation by fuel type is shown in the Charts below:

Chart 10.2 (a)

Chart 10.2 (b)

Ref: BPDB

The natural gas consumption in BPDB power plants was 107 billion cubic feet in 1995-96 which increased to 151 billion cubic feet in FY 2011-12. The consumption of natural gas and liquid fuel since FY 1995-96 are shown in Table-10.1 below:

Table 10.1: Fuel Consumption by BPDB Power Plants

Fiscal Year	Natural Gas (Billion cft)	Coal (1000 Ton)	Liquid Fuel (million liter)	
			Furnace Oil	HSD, SKO & LDO
1995-96	107	-	63	167.97
1996-97	107	-	104	2534
1997-98	120	-	904	267
1998-99	137	-	44	204
1999-00	141	-	114	92
2000-01	151	-	95	77
2001-02	152	-	85	55
2002-03	131	-	128	62
2003-04	134	-	174	95
2004-05	141	-	186	130
2005-06	154	190	171	125
2006-07	146	510	93	99

Fiscal Year	Natural Gas (Billion cft)	Coal (1000 Ton)	Liquid Fuel (million liter)	
			Furnace Oil	HSD, SKO & LDO
2007-08	151	450	137	111
2008-09	161	470	90	113
2009-10	167	480	10	125
2010-11	150	410	119	138
2011-12	151	450	183	60

Maximum Generation

Maximum peak demand could not be met for the last few years due to shortage of available generation capacity and increasing demand though the installed generation capacity increased. Particularly there has been a significant increase in FY 2011-12. It is to be noted that the maximum generation was 2087 MW in FY 1995-1996 which increased to 6066 MW in FY 2011-12. The installed capacity and the maximum generation since FY 1995-1996 are shown in Table-10.2 below:

Table – 10.2: Installed Capacity and Maximum Generation

Fiscal Year	Installed capacity (derated) MW	Maximum generation MW	percent of change with previous year
1995-1996	2105	2087	-
1996-1997	2148	2114	1.29
1997-1998	2320	2136	1.04
1998-1999	2850	2449	14.65
1999-2000	2665	2665	8.82
2000-2001	3033	3033	13.81
2001-2002	3218	3218	6.10
2002-2003	3428	3458	7.46
2003-2004	3592	3622	4.74
2004-2005	3721	3751	3.56
2005-2006	3782	3812	1.63
2006-2007	3718	3718	-2.47
2007-2008	4130	4130	11.08
2008-2009	5166	4162	0.77
2009-2010	5271	4606	10.67
2010-2011	6639	4890	6.17
2011-2012	8100	6066	24.05

Source: Bangladesh power Development Board.

Power Generation Programme

The Government prepared its Power System Master Plan in 2010 (PSMP 2010). According to PSMP-2010, the maximum demand in 2015, 2021 and 2030 will be 12,000, 20,000 and 36,000 MW respectively. To meet the demand with reliability, installed capacity need to be enhanced to 24,000 MW and 39,000 MW by the year 2021 and 2030 respectively. To meet this demand, short, medium and long term generation, distribution and transmission plans are at the various stages of implementation. According to the existing generation expansion programme, a total of 15,000 MW of new generation will be added to the national grid between FY 2010 -2016. The present status of the existing generation programmes are shown in Table-10.3 below:

Table-10.3 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.	Raujan	25	RPCL	October, 2012
02.	Santahar 50 MW Peaking Power Plant	50	BPDB	November, 2012
03.	Katakhali 50 MW Peaking Power Plant	50	BPDB	November, 2012
04.	Sirajganj 150 MW GT	150	NWPGC	October, 2012
05.	Khulna 150 MW GT	150	NWPGC	May, 2013
06.	Haripur 360 MW CCPP GT	273	EGCB	Feb, 2013
07.	Haripur 360 MW CCPP ST	139	EGCB	July2013
08.	Ashugonj 225 CCPP: SC GT Unit	150	APSCL	June2014
09.	Ashugonj 225 CCPP: ST Unit	75	APSCL	March2015
10.	Ashuganj (South) 450 MW CCPP	450	APSCL	Dec, 2014
11.	Siddirganj 450 MW CCPP: SC GT Unit	200	EGCB	Feb,2014
12.	Siddirganj 450 MW CCPP : ST Unit	135	EGCB	Dec. 2014
	Sub-Total (Public)	1847		

Private Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	Chittagong (Mohora) 50 MW Power Plant	50	IPP	May2013
02.	Jamalpur Peaking	95	IPP	June2013
03.	Munshigonj, (Kathpotti) 50 MW Power Plant	52.5	IPP	June2013
04.	Chittagong (Patenga)100 MW Power Plant	108	IPP	July2013
05.	Keranigonj, (Basila) 108 MW Power Plant	108	IPP	Aug2013
06.	Dhaka (Gabtoli) 108 MW Power Plant	108	IPP	Oct2013
07.	Narayangonj (Gogonnagar)100 MW PP	102	IPP	Oct 2013
08.	Meghnaghat 300-450 MW CCPP (2nd Unit) Duel Fuel: SC GT Unit	220	IPP	Oct2013
09.	Khulna Peaking	100	IPP	Dec2013
10.	Bosila, Keranigonj	108	IPP	Dec2013
11.	Comilla (Homna) 50 MW Power Plant	52.5	IPP	Dec2013
12.	Meghnaghat 300-450 MW CCPP (2nd Unit) : ST Unit	115	IPP	July2014
13.	Bhola 150-225 MW CCPP (2nd unit):SC GT Unit	145	IPP	Aug2014
14.	Bibiana 300-450 MW CCPP (1st Unit): SC GT Unit	222	IPP	March 2015
15.	Bibiana 300-450 MW CCPP (2nd Unit): SC GT Unit	222	IPP	March 2015
16.	Bhola 150-225 MW CCPP (2nd unit): ST Unit	73	IPP	June2015
17.	Chittagong 150-300 MW Coal Fired Power Project	283	IPP	June2015
18.	Khulna 150-300 MW Coal Fired Power Project	283	IPP	June2015
19.	Bibiana 300-450 MW CCPP (1st Unit): ST Unit	119	IPP	Jan2016

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
20.	Bibiana 300-450 MW CCPP (2nd Unit): ST Unit	119	IPP	Jan2016
21.	Maowa, Munshiganj 300-650 MW Coal Project	522	IPP	Feb2016
	Sub-Total (Private)	**3207**		
	Total (Under Construction) (A)	**5054**		

(B) <u>Under Process</u>

Public Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	Regional Power	500	IPP	Aug2013
02.	Ashugonj 200±10 percent MW Modular Power Plant	175	IPP	Nov2013
03.	Ashugonj 200±10 percent MW Modular Power Plant	20	IPP	Feb2014
04.	Kodda, Gazipur 150 MW Power Plant	150	BPDB-RPCL Powergen Ltd.	March2014
05.	Chapai Nababganj	100	BPDB	May2014
06.	Sylhet 150 MW Power Plant Conversion	75	BPDB	May2014
07.	Bagabari 100 MW Power Plant Conversion	50	BPDB	Aug2014
08.	Shahajibazar 70 MW Power Plant Conversion	35	BPDB	Aug2014
09.	Sirajgonj150 MW Power Plant Conversion	75	NWZPGC	Aug2014
10.	Bibiana #3 CCPP: SC GT Unit	300	BPDB	Sept2014
11.	Bhola 225 MW CCPP: SC GT Unit	131	BPDB	Sept2014
12.	Shikalbaha 150-225 MW CCPP: SC GT Unit	150	BPDB	Sept2014
13.	Shajibazar CCPP : SC GT Unit	200	BPDB	Dec2014
14.	Ghorasal 300-450 MW CCPP: SC GT Unit	200	BPDB	Dec2014
15.	Bibiana #3 CCPP: ST Unit	150	BPDB	June2015

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
16.	Bheramara 360 MW CCPP	360	NWPGC	June2015
17.	Shikalbaha 225 MW CCPP: ST Unit	75	BPDB	June2015
18.	Bhola 225 MW CCPP: ST Unit	74	BPDB	Aug2015
19.	Shajibazar CCPP: ST Unit	100	BPDB	Oct2015
20.	Ghorasal 300-450 MW CCPP : ST Unit	100	BPDB	Oct2015
21.	Barapukuria 250-300 MW (3rd Unit)	250	BPDB	Jan2016
22.	Ashugonj (North) CCPP	450	APSCL	Jan2016
	Sub-Total (Public)	**3720**		

Private Sector

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	Ghorashal, Narsingdi 100 MW PP	108	IPP	Oct2013
02.	Ashugonj 50 MW PP	51	IPP	Oct2013
03.	Nababgonj 50 MW PP	50	IPP (REB)	Dec2013
04.	Munshigonj 50 MW PP	50	IPP (REB)	Dec2013
05.	Manikganj 50 MW PP	50	IPP (REB)	Dec2013
06.	Kaliakoir Peaking Plant, Gazipur	149	IPP	March2014
07.	Bhairab, Kishorgonj 50 MW PP	50	IPP	March2014
08.	Satkhira 50 MW PP	50	IPP	March2014
09.	Keraniganj 150 MW PP	150	IPP	March2014
10.	Fenchuganj 100-150 MW CCPP	163	IPP	June, 2014
11.	Tangail 20 MW	20	IPP (REB)	June2014
12.	Narayangonj 50 MW	50	IPP (REB)	June2014
13.	Sirajganj 300-450 MW CCPP: SC GT Unit	249	IPP	Jan2015
14.	LNG Based 200-850 MW CCPP: SC GT Unit	150	IPP	March2015
15.	Sirajganj 300-450 MW CCPP:ST Unit	118	IPP	Oct2015

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
16.	LNG Based 200-850 MW CCPP: ST Unit	75	IPP	March2016
17.	Khulna 1300 MW Large Coal	1300	PPP (Joint Vent.) / IPP	June, 2016
	Sub-Total(Private)	**2833**		
	Total (Under Process)(B)	**6553**		
	Gross Total (A+B)	**11,607**		

(C) Solar & wind Power Projects

Sl. No.	Name of the Power Plant	Capacity (MW)	Owner	Expected Commissioning Date
01.	Shalla Sunamgonj	0.4	BPDB	2013
02.	Hatia Solar Wind Diesel Hybrid	7.5	BPDB	2013
03.	Kaptai Solar	5	BPDB	Sept2014
04.	Solar	7	IPP (BPDB)	Jan2015
05.	Wind	100	IPP (BPDB)	March2015
	Total (C)	**120**		
	Total (A+B+C)	**11,727**		

Source: Power Division

Power Distribution

The distribution system comprises of 33kV, 11kV and 0.4kV lines. In FY 1995-96, the total distisbution lines in the BPDB system was 35,962 km, which decreased to about 33,304 km in FY 2010-11 as some distisbution lines have been handed over to REB and WZPDCL. The number of consumers has also increased to 23,35,311 in FY 2010-11 from 21,59,897 in FY 2009-10.

Sale of Electricity by BPDB

The bulk electricity sales by BPDB stood at 21,162 MkWh in FY 2011-12. Out of this, 19.36 percent was sold to DPDC, 10.32 percent to DESCO, 38.96 percent to REB, 6.14 percent to WZPDC and 25.18 percent to various zones of BPDB'. The bulk sale of electricity is shown in the chart below:

Chart 10.3: Bulk Sale of Electricity

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

System loss is one of the key performance indicators of the distribution entities. To achieve desirable performance and viability of the sector, there is no alternative to bringing down the system loss to an acceptable limit. Various measures like continuous performance monitoring of the utilities, reforms and target-oriented measures are underway to reduce the system loss. The system loss (distribution) came down to 12.75 percent in FY 2011-12 from 25.34 percent in FY 2000-01. The table below shows year wise distribution system loss of BPDB:

Table –10.4 Distribution System Loss of BPDB

FY	Distribution
2000-01	25.34 percent
2001-02	23.92 percent
2002-03	21.64 percent
2003-04	20.04 percent
2004-05	17.83 percent
2005-06	16.53 percent
2006-07	16.26 percent
2007-08	15.56 percent
2008-09	14.33 percent
2009-10	13.49 percent
2010-11	12.75 percent
2011-12	12.26 percent

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 2011-12. The table below shows year wise accounts receivable:

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
2011-12	2.21

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 Water 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 of 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 Zones.

- Electricity Generation Company of Bangladesh (EGCB) was created as a generation company in 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 of 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 going to be set up 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 Ltd. (PGCB)

PGCB was created to enhance efficiency and to establish accountability. It is responsible for operation, maintenance and development of transmission system all over Bangladesh. It was created in 1996 as a solely 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 created, the total length of 230 kV and 132 kV lines stood at 838 ckt km and 4,755 ckt km respectively. Through various interevtions to upgrade the transmission lines,, the length of 230kV and 132 kV transmission lines now stands at 1,809.30 kilometres and 1,316.34 kilometres. As many as seven 230/132 kV and thirteen 132/33 kV sub centres were set up with the capacity of 2,925 and 1,450 MVA. Besides, in 8 subcentres, 450 Megaver Capacitor Bank (132kV) was established along with the 2,501 MVA capacity development in existing grid subcentres.

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. 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.
- Khulna- and Bogra-Barapukuria 230 kV double circuit Transmission Line.
- Construction of Joidevpur-Kabirpur-Tangail 132 kV Transmission Line
- Installation of second east-west electric Transformer (Asugonj-Jamuna Bridge-sirajgonj 230 kV Transmission Line)
- Ishurdi-Vagabari-Sirajgonj-Bogra 230 kV Transmission Line
- National load Despatch Centre(NLDC) project
- Three Transmission Line (132 kV) Construction project
- Rajshahi- Natore 132 kV Single Circuit Transmission Line (PGCB's own fund)..
- Aminbazar-Savar 132 kV Transmission Line
- Naogaon-Niamatpur 132 kV Transmission Line
- Ashuganj-Shahjibazar 230 kV Single Circuit Transmission Line

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 a view to providing electricity to all by 2020. Box 10.3 below lists the projects that are under active consideration as included in 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, 2012- 13 to 2014-15).	DPP prepared and sent to Power Division on 09/11/2010. Project evaluation meeting held on 23/02/2011. As per suggestion of the meeting DPP was 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.

SI No.	Name of the Project (Implementation Period)	Present Status (Upto June, 2011)
3.	National Power Transmission Network development project (2012-13 to 2014-15).	DPP prepared and sent to Power Division on 12/12/2010. Project evaluation meeting held on 23/02/2011. Proposed for JICA funding.
4.	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.
5.	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.
6.	Ishurdi-Rajshahi 230 kV Transmission Line. (2011-12 to 2013-14).	Pre-DPP approved in principle on 27/09/2010. Financing is awaited.
7.	Construction of 230/132 kV Substations at Shyampur, Jhenaidah (Or Jessore), Bheramara and Sripur. (2012-13 to 2014-15).	Pre-DPP submitted.
8.	Enhencement of Capacity of existing 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.
9.	Chandraghona-Rangamati-Khagrachari 132 kV Transmission Line. (2012-13 to 2014-15).	Pre-DPP submitted. Financing is awaited
10.	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 created government owned power distribution company, 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 FY 2010-11 stood 7,35,372 within the jurisdiction of DPDC and it increased to 80,6357 in FY 2011-12. The maximum system demand was 1,215.66 MW in FY 2010-11 which rose to 1280.43 MW in FY 2011-12. 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	737468	1215.66
2011-12	806357	1280.43

Source: DPDC.

Reform Activities and Good Governance

From the very beginning, the company undertook different measures to enhance its customer-service and to make the company profitable. Following 'Zero Tolerance' principle enforced strictly against corruption, the company started to improve its position in accountability and transparency.

For better customer service, DPDC has taken some excellent steps for its customers such as payment of electricity bill through mobile phone, load shedding schedule over internet, customer service according to the citizen's charter, distribution of clearance certificate of electricity bill etc. Under renewable energy program, DPDC has taken an initiative to install solar panel in all substations and KPIs. Electronic surveillance program is under the process of implementation in all KPIs also.

To improve efficiency, DPDC arranged training programmes for employees under power sector capacity development programme (PSCDP). In FY 2011-12, as many as 11,017 employees including officers attended the training programmes. As a result, DPDC customer service improved and the sytem loss reduced to 9.87 percent. For the improvement and development of infrastructure and better customer service, DPDC has taken up short, medium and long- term plans to implement the Power Sector Road Map.

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 electricity 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' 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 *Dakshinkhan* 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 640 MW in FY 2010-11 while in FY 2011-12, it stood at 715 MW. Expansion of 33kV underground lines has been continuing. In FY 2011-12, the underground lines (33kV) installed was 249.61 km which was 215.88 km in the previous year (2010-11). On the other hand, 1044.55 km 11 kV overhead lines and 360.54 km 11 kV underground lines were installed in FY 2010-11 which stood at 1084.05 km and 390.29 km respectively in FY 2011-12. Similarly, 1,717.5 km Low Tension (LT) lines installed in FY 2010-11 have been expanded to 1774.73 km in FY 2011-12. DESCO distributed as many as 4938 transformers in FY 2010-11 while in FY 2011-12 it stood at 5,227. It may be mentioned that, the installed capacity of 33/11 kV sub-station of DESCO was 980/1,372 MVA in FY 2011-12 while it was 880/1232 MVA in FY 2010-11. Table 10.7 shows the Technical Operations of DESCO during FY 2006-2007 to 2011-12:

Table 10.7: Technical Operations of DESCO

Sl No	Description	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
	1	2	3	4	5	6	7
01	33/11kV Sub-stations (No.)	19	21	21	22	22	25
02	Capacity of 33/11kV Sub-stations (MVA)	680/952	760/1064	760/1064	770/1078	880/1232	980/1372
03	Maximum Demand (MW)	451	505	545	622	640	715
04	33kV Overhead Line (KM)	82.80	82.80	82.80	82.80	82.80	82.8
05	33kV Underground Line (KM)	182.20	182.20	184.84	204.37	215.88	294.61
06	11kV Overhead Line (KM)	860.40	884.00	959.25	1017.86	1044.55	1084.05
07	11kV Underground Line (KM)	314.35	317.10	317.10	350.12	360.54	390.29
08	LT Line(KM)	1473.25	1521	1591.39	1671.88	1717.35	1774.73
09	Distribution Transformer(No.)	4316	4497	4563	4814	4938	5227

Source : DESCO.

Commercial Operations

The import and sale of energy stood at 3,122.746 and 2848.381 MKHw in FY 2010-11 while in FY 2011-12, the volume rose to 3,401.585 MKHw and 3,111.124 MKHw respectively. During this period, the number of consumers also increased. In FY, 2010-11 and FY 2011-12, the number of consumers of DESCO were 4,49,063 and 5,04,729 respectively.

In FY 2011-12, a total of Tk. 15,859.65 million was collected against the sales target of Tk. 16,094.63 million and the bill-collection ratio between energy sold (MTk.) and the amount collected (MTk.) rose to 98.54 percent. On the other hand, in FY 2010-11, a total of Tk. 1,2270.85 million was realised against the sales target of Tk. 1,2400.18 million and the bill-collection ratio stood at 98.96 percent.

Necessary steps have been taken by DESCO to reduce the overall system loss. In FY 2011-12, the system loss of DESCO was 8.54 percent which was 8.79 percent in FY 2010-11. Table 10.8 shows the commercial operations of this entity during FY 2006-07 to FY 2011-12 :

Table-10.8 : Commercial Operations of DESCO:

Sl No.	Description	2006-07	2007-08	2008-09	20-2010	2010-11	2011-12
	1	2	3	4	5	6	7
01	Energy Import						
	(MKWh)	2191.46	2573.76	2742.96	2933.72	3122.75	3401.585
	(MTk.)	4946.36	6151.29	7117.53	7845.65	8801.83	13327.738
02	Energy Sales						
	(MKWh)	1897.00	2293.03	2474.51	2673.69	2848.38	3111.124
	(MTk.)	7219.58	9094.19	9888.30	10911.20	12400.18	16094.631
03	System Loss (percent)	13.44	10.91	9.79	8.86	8.79	8.54
04	Collection Amount (MTk.)	7705.86	9095.30	9708.62	10774.84	12270.85	15859.65
05	Collection Ratio (percent)	104.40	100.01	98.18	98.75	98.96	98.54
06	C. I. Ratio (percent)	90.37	89.10	88.57	90.00	90.26	90.13
07	Consumers	347614	385037	415842	446129	449063	504723

Source : DESCO

E-Governance

To keep pace with the technological advancement and to make the utility management more user-friendly, DESCO decided to launch e-governance programme with a unified approach. Activities under DESCO include One Point Service Complaint,New Connection,Monthly Bill Collection,Miscellaneous Bill Collection,DESCO Website and e-mail Communication. Inter Office Wide Area Network (WAN) Connectivity has already been developed and implemented. Besides this, Store Management, Control Room and Sub-station Maintenance,Personal Management, Human Resource Management and Development and 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 enrgy 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 with 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 and now it is recognised as a national and an international model.

Rural Electrification Board by its network of 70 PBSs up to June 2012, , has given a total of 91,32,903 connections in 49,061 villages. Of which as many as 78,75,105 are domestic, 2,53,652 irrigation, 8,50,456 commercial, 1,39,274 industrial and 14,416 other connections. However, the following table show the targets and achievements made against Rural Electrification Programme during FY 2000-01 to FY 2011-2012:

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

FY	Distribution Lines (km)			No. of Consumers Connected		
	Target	Achievement	Variance (-) / (+)	Target	Achievement	Variance (-) / (+)
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
2011-12	7700	10049	7021	269500	723713	464165
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 2011-12:

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

Year/ month	MWH purchased		MWH sold/consumed						Avg System loss of 70 PBS (percent)	
	Grid Meter	Sub-station	Domestic	Industry	Commercial	Agriculture	Others	Total	Grid Meter	Sub-station
2011-12										
July' 2011	1222146	1176117	585738	297495	90115	32488	1237	1007073	17.60	14.37
Aug'2011	1273464	1223925	617794	280236	91801	23398	1255	1014483	20.34	17.11
Sept'2011	1216303	1171638	715750	237736	97332	24391	1273	1076482	11.50	8.12
Oct'2011	1214712	1170476	629948	295487	95122	40111	1326	1061994	12.57	9.27
Nov 2011	989526	964325	556403	234924	89894	36411	1262	918894	7.14	4.71
Dec'2011	1049389	1013580	474784	305715	80987	37188	1223	899897	14.25	11.22
Jan'2012	1198031	1153880	494224	307963	82904	166254	1260	1052604	12.14	8.78
Feb'2012	1220639	1181564	470815	274698	78817	280502	2063	1106859	9.32	6.32
Mar'2012	1298734	1242689	424574	286887	75233	302852	1891	1091487	15.96	12.17
April'2012	1126083	1082503	456722	263061	74764	191743	1234	9878524	12.30	8.77
May'2012	1216161	1172778	507988	333531	81725	73063	1287	997594	17.97	14.94
June'2012	1238717	1190343	643522	290156	90905	28889	1384	1054856	14.85	11.38

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: Receivables and Payables 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 164verage) (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
2011-12	1.55	7237936	3861610

* Total Cost of Power Purchase.

Bill collection

Bill collection rate of REB in FY 2009-10 was 97.95 percent which stood at 96.02 percent in FY 2011-12. Table 10.12 below shows the performance of electricity bill collection by REB during FY 2000-01 to FY 2011-12.

Table 10.12: Statistics of bill collection by REB

Financial Year	Amount of Bill (Lakh Taka)	Receivable Amount (Lakh Taka)	Percentage of Bill Collection
2000-01	108017.95	102686.66	96 percent
2001-02	112919.90	110876.04	98 percent
2002-03	167566.68	160047.78	98 percent
2003-04	200226.60	196222.068	98 percent
2004-05	224044.32	219563.43	98 percent
2005-06	257356.92	245981.74	95.58 percent
2006-07	261319.08	263200.58	100.72 percent
2007-08	292830.72	293592.07	100.26 percent
2008-09	316249.10	292846.90	98.82 percent

Financial Year	Amount of Bill (Lakh Taka)	Receivable Amount (Lakh Taka)	Percentage of Bill Collection
2009-10	374598.84	366919.56	97.95 percent
2010-11	424741.20	418115.24	98.44 percent
2011-12	559935.50	537630.23	96.02 percent

Environmental and Information Technology Development and Expansion:

The Government has taken an initiative to conduct a feasibility study to facilitate Countrywide Fiber Optic Network through electricity transmission and distribution network. A committee has been formed to serve this purpose. In accordance with the recommendation of the committee, an initiative has been taken to set up Fiber Optic Network through joint investment. by using the existing infrastructure of power sector entities and setting PDB as the focal point. In order to produce financial and statistical reports all PBSs have already been under a computerized system. In addition, goods inventory and billing systems have also been computerised. Graphic Information System (GIS) is being used in PBSs and by phases it will be introduced in all PBSs to improve services to the consumers. REB has also begun using Bangladesh National Electronic Government Procurement (e-GP) system.

Moreover, REB has already been implemented online Electricity Connection Application System in Dhaka PBS-1 and also implementing in other 69 PBSs. Electricity Bill Collection through SMS has been Implemented in three PBSs namely Dhaka PBS-2, Gazipur PBS and Cox's Bazar PBS. REB is also implementing Electricity Bill Collection through SMS/Banking in all 70 PBSs.

On going projects under Rural Electrification Board (REB)

Under RADP of FY 2011-12, REB was provided with an allocation of Tk. 58,109.00 lakh (of which Tk. 46,389.00 lakh in local currency and Tk. 11,720.00 lakh in project aid) for implementation of 12 projects. It may be noted that, of the 12 on going projects, as many as 7 projects are meant for of expansion of distribution lines to bring new customers under the electricity coverage.

It may be further noted here that in order to ensure further expansion of Rural Electrification Programme, development and upgradation of existing distribution system, utilisation of renewable energy and electrical energy savings, 24 new projects have been proposed.

Out of these proposed projects, 7 projects meant for expansion of distribution lines has been approved with an outlay of Tk.7,500.71 crore (approx). Through these approved projects, 65,930 km new distribution lines will be either constructed or renovated and 234 electric sub-station will be established to bring 25,28,000 different categories of new consumers under the coverage of new facilities. On the other hand, out of 3 upgradation and consumer service related distribution

line projects, the "Rural Electrification Upgradation Project (Rajshahi, Rangpur, Khulna and Barishal Divisions)"- project has already been approved under which 5,184 km. 33 kv and 11 kv new lines will be constructed/upgraded, 50 new sub-stations will be constructed and existing 30 sub-stations will be upgraded.

Private Investment in Power Sector

The 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 as many as 23,171 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 NGOs 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

Natural gas is an important source of energy that accounts for 75 percent of the commercial energy of the country. Till date 24 gas fields have been discovered in the country. Recently Petrobangla recalculated the total gas reserve in Bangladesh. Now total gas in place is 37.680 trillion cubic feet (tcf) , of which 26.877 tcf (P1+P2) is recoverable. As of June 2012, of total of

10.514 tcf gas has been produced leaving 16.363 tcf net recoverable. Fieldwise gas reserves are presented in table given below:

Table 10.13: Bangladesh Gas Reserves

Unit: Billion cubic foot (BCF)

Gas field	Producing Wells	Total Reserve (Proven + Probable)	Reserve (Recoverable)	Production July'11- June' 12	Cumulative Production as of June' 2012	Net Recoverable Reserve
Bakhrabad	5	1,498.60	1231.5	11.9	729.3	502.24
Habiganj	9	5,139.0	2633.0	91.1	1887.8	745.21
Kailashtilla	6	2,720.10	2760.0	30.3	560.8	2199.24
Rashidpur	5	2,002.0	2433.0	17.3	501.2	1931.81
Sylhet	1	683.9	318.9	3.7	197.1	121.80
Titas	15	7,325.0	6367.0	160.9	3454.9	2912.05
Narsingdi	2	307.2	276.8	10.8	133.0	143.84
Meghna	1	170.6	69.9	3.7	42.4	27.47
Sangu	3	1,031	577.8	3.8	481.8	95.99
Saldanadi	3	165.8	279.0	4.7	50.9	228.14
Jalalabad	4	1,195	1184.0	61.4	680.4	503.63
Beanibazar	2	243.1	203.0	4.1	71.1	131.87
Fenchuganj	3	404	381.0	10.4	88.3	292.73
Moulavibazar	4	448.9	428.0	17.0	196.1	231.95
Feni	1	185.2	125.0	0.0	62.4	*67.3*
Bibiyana	12	3,144.5	5754.0	271.6	1125.7	4628.26
Bangura	4	441	522.0	36.6	194.6	327.44
SHAHBAZPUR	2	664.3	390.0	0.7	5.6	384.37
SEMUTANG	1	227.0	317.7	2.6	2.6	315.15
SUNDALPUR	1	62.2	35.1	0.9	0.9	34.3
NOT IN PRODUCTION:						
BEGUMGANJ		39.0	21.0	0	0.00	21.0
KUTUBDIA		65.0	45.5	0	0.00	45.5
PRODUCTION SUSPENDED						
CHHATAK		1039.0	473.9	0	26.46	447.4
KAMTA		71.8	50.3	0	21.1	29.2
TOTAL	84	37680.2	26877.5	743.5	**10514.2**	**16363.3**

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

Natural Gas Production and Sectorwise Consumption

Currently, 84 wells in 19 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. Year-wise/sector-wise natural gas production and consumption are shown in Table 10.14 below:

Table 10.14: Production and Consumption of Natural Gas by Sector

Unit: billion cubic feet

Fiscal Years	Production	Sectors									Total Sales
		Power	Fertilizer	Industry	Captive Power	Tea Estates	B. Fields (seasonal)	Commercial	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	708.90	273.8	121.20	62.80	121.5	0.80	0.00	8.50	87.40	38.50	714.4
2011/12	743.57	304.30	123.56	58.39	128.45	0.76	0.00	8.55	89.15	38.54	751.81

Source: Petrobangla , Energy and Mineral Resources Division

Chart 10.4: Sector wise Gas Consumption Pattern

Demand for Natural Gas

It appears that sector wise natural gas demand is on the increase. The total demand for gas in FY 2011-12 is 751.81 BCF whereas it was at 708.09 in FY 2010-11. In FY 2010-11 , the demand from the power sector was 273.10 BCF which is the highest among other sectors. The demand for natural gas consumption in power sector (Grid+Non-grid) in FY 2011-12 stood at 304.3 BCF. Sector-wise demand for gas during FY 2011-12 to 2014-15 is shown in Table 10.15 below:

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

Unit: billion cubic foot

F/Y	2011-12	2012-13	2013-14	2014-15
Power	304.3	350.5	378.5	416.4
Captive	123.56	188.6	216.9	234.3
Fertilizer	58.39	94.0	94.0	94
Industry	128.45	214.4	246.5	258.8
Commercial	8.55	11.7	12.6	13
Brick	0	0.0	0.0	0
Domestic	89.15	124.8	139.8	148.2
Tea-Estate	.76	1.0	1.0	1
CNG	38.54	56.5	113.0	120.9
System Loss		20	20.0	20
Total	**751.81**	**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 2011-12, within the oil, gas and mineral resources sector, a total of 29 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 programme (including installation of gas compressor stations), 4 projects for gas distribution programme, 2 projects to conduct 3D and 2D seismic surveys. Besides under the self finance of local gas companies, 9 projects are under implementation.

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 2011-12, it handled the processing of 53,9849(upto Feb) 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 potential, vehicle conversion to CNG is increasing day by day. In FY 2001-02, the number of CNG run vehicles stood at as many as 6,734 whereas it reached to 2,12,594 in FY 2011-12 (upto feb). As many as 587 CNG filling stations and 180 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

Five coal fields have been discovered in the north-west part of Bangladesh. These are Khalaspir coal field in Rangpur, Barapukuria, Phulbari and Dighipara coal field in Dinajpur and Jamalgong coal field in Joypurhat/Naogaon. The estimated reserve of these coal fields are approximately 3,300 million tonnes which is equivalent about 45-50 trillion cubic feet gas. Out of these coal fields, Barapukuria Coal field has developed and commercial production has begun from September 2005. Annual production target of Barapukuria Coal Mine is 1 million tonnes. At present, daily production is approximately 2,500-3,000 metric tonness. 65 percent of this coal is used in 250 MW power plant of BPDB at Barapukuria, Dinajpur. Remaining of the coal is used in brick fields, boiler industry, steel re-rolling mills etc. Barapukuria Coal Mine has produced 4.55 million tons up to June 2012. It is to be mentioned that Petrobangla has achieved Exploration License from Bangladesh Mineral Development (BMD) for development of Dighipara coal field. A detail Techno-economic Feasibility Study on Dighipara Coal Field will commence very soon.

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 2012 about 19.56 lakh metric tonnes of hardrock were 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 supply, distribution and marketing of petroleum products uninterrupted 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 2011-12 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
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	646.21	4,491.41
2010-11	14,09,302	978.81	7,037.00
2011-12	10,85,937	919.26	7,053.51

Source: Energy and Mineral Resources Division

Table: 10.17 (a): Import of Refined Petroleum Products

Financial Year	Diesel, Kerosene, Octane & Jet A-1		Lubricating Base Oil	
	Quantity (Metric ton)	Value (Crore Taka)	Quantity (Metric ton)	Value (Crore Taka)
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

Financial Year	Diesel, Kerosene, Octane & Jet A-1		Lubricating Base Oil	
	Quantity (Metric ton)	Value (Crore Taka)	Quantity (Metric ton)	Value (Crore Taka)
2008-09	25,07,819	10,945.24	4,828	23.63
2009-10	26,34,212	12,024.18	7,262	52.03
2010-11	24,88,456	21,403.69	4,749	43.75
2011-12	34,09,934	27,111.24	4,980	53.11

Source: Energy and Mineral Resources Division

* It is to be mentioned that BPC has imported 6,80,982 metric tons High Sulpher Furnace Oil with C&F value Taka 3,819.07 crores during 2011-2012 financial year to feed the Rental, Quick Rental and Peaking Power Plants for generation of electricity.

Table: 10.17 (b): Import of Refined Petroleum Products (High Sulpher Furnace Oil 180 CST*)

Financial Year	High Sulpher Furnace Oil 180 CST*	
	Quantity (Metric ton)	Value (Crore Taka)
2010-11	2,30,524	1,123.17
2011-12	6,80,982	3,819.07

Source: BPC, Energy and Mineral Resources Division.

Subsidy for Petroleum Products

Bangladesh Petroleum Corporation (BPC), since its inception, has been importing crude and refined petroleum products. Price of the petroleum products fluctuates in the international market depending on market fundamentals. BPC procures oil at international price. It has suffered financially for most of the years since it started importing fuels due to its inability to adopt a full pass-through of purchase price to domestic customers. Domestic retail selling price is lower than the imported cost. It is important to gradually adjust domestic retail selling price to allow BPC to make full cost recovery. BPC has incurred a loss of Tk. 10,551.74 crores during FY 2011-12. On the other hand, the Corporation contributed Tk. 4,400 crores to the Government exchequer as duty and taxes. Loss of BPC due to price differentials and 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

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

Financial Year	Contribution to the Government exchequer	Financial Loss
2010-11 (Provisional)	3100.00	9100.00
2011-12 (Provisional)	4400.00	10551.74

Source: BPC, Energy and Mineral Resources Division.

Mineral Resources (except oil and gas) Investigation, Exploration and Evaluation

Geological Survey of Bangladesh (GSB) is an attached department to the Energy and Mineral Resources Division, Ministry of Power, Energy and Mineral Resources, Government of the People's Republic of Bangladesh. GSB is entrusted with the responsibilities to investigate and exploration of mineral resources (except oil and gas), to evaluate and research in various fields of geology, infrastructure development, urban and land use planning, to provide geoscientific advise of development work to the government and non-government agencies, policy makers and planners for reduction of natural and man-made risk and hazard potential with various engineering works such as urbanisation and industrialisation, dam, bridge, construction of roads and highways etc. Assessment of natural hazards and building awareness of the mass people how to mitigate against those natural calamities is also the routine work of GSB.

Digital Elevation Model (DEM) and Digital Terrain Model (DTM) database have been prepared by advance LiDAR technology for High Resolution Terrain Modeling and Slope gradient of North-Eastern Part of Greater Dhaka City. Detail Geological mapping of 260 sq. km. as well as 3-Dimensional Geological Modeling of about 40 sq. km have completed. GSB started research work on Geo-hazards especially on landslide, earthquake and compactness of different dams and an Landslide Early Warning System (LEWS) has been installed in Chittagong University area in 2011.

GSB is now working in Rangpur, Dinajpur, Tangail, Mymensing, Bogra, Rajshahi, Cox's Bazar and Tecknaf City Corporation area for Microseismic Zonation Mapping combined with Comprehensive Disaster Management Programme (CDMP) Phase-II under the Ministry of Food and Disaster Management. There is a plan to install five Global Positioning System (GPS) Stations in Dhaka, Shalna (Gazipur), Mymensing City, Haluaghat (Mymensing) and Khulna in first phase for earthquake disaster management to assess the neo-tectonic activities about earthquake in and around Bangladesh. Besides this, investigation of peat deposits has been completed in an area of 4,000 hectare of Bijoynagar Upazila under Brahamnbaria district, Bangladesh during the fiscal year 2011-12.

Technical Arm of Energy and Mineral Resources Division (EMRD)

It provides technical support to Energy and Mineral Resources Division for the development of Oil, Gas and Mineral Resources sector and materials related thereto. Hydrocarbon Unit was put into permanent status on 28 May 2008. "Strengthening of the Hydrocarbon Unit" is a Technical

Assistance project under Energy and Mineral Resources Division. At present, the second phase of the project is being implemented, the tenure of which will be expired on December 2012.

Under this project, different activities are being carried out through engaging International consulting firms. These include 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 and Mines and Minerals Development i.e. to develop action plans on Coal Mining, Coal Development Strategy (including peat), CBM, UCG and Hard Rock Development activities and review of the existing Mining Act, Rules and Regulation etc. The project is also implementing the establishment of `National Archive System Database Management Software' regarding extraction, transmission and use of gas produced by local and foreign companies in the gas fields of the country, `Cost Database Software' for entire accounts under PSCs and other contracts, `Petroleum development Management System (PDMS)' for maintaining records about import, stock, transportation from port to depots and use of fuel oil etc.

A mini-data bank in the Hydrocarbon Unit operates some selected data of the Hydrocarbon sector like Gas Reserve, Undiscovered Gas Resources and Gas Production & Consumption. Hydrocarbon Unit publishes monthly report on "Gas Reserve & Production" and also issues annual report on "Gas Production & Consumption".

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 1934, the Explosives Act, 1884 and the rules framed thereunder. The important activities carried out during FY 2011-12 include import of 1,88,684 LPG cylinder and issuance of 87 storage licenses for LPG cylinders, issuance of import permit/license in favour of nationalized gas field companies, Maddhyapara Hard Rock Mining Co., Barapukuria Coal Mining Company and other international oil companies for the import 65 metric tonnes of Power Gel for four mine fields, as many as 99,018 pieces of Charges and detonators. As many as 9 petroleum storage permits/licenses have been issued in favor of Rental Power Plant run by diesel/furnace oil. Other activities of the Department of Explosives were: approval of results of as many as 50 Leak Tests carried out for ensuring safety of high pressure gas pipelines aiming at implementing the gas transmission expansion programmers', test of as many as 11,898 petroleum carrying/storage tanks of different petroleum oil tankers and ships before scraping and issuance of "Gas Free" certificates in favor of them, provided expert opinion to the Honorable Court on as many as 179 of bomb/cocktail/improvised devices against the cases framed under the Explosives Substances Act, 1908.

Regulatory Functions in Energy Sector

With a view to expedite the generation, distribution, transmission and transportation of electricity for long-term development in the energy sector, Bangladesh Energy Regulatory Commission (BERC) has taken several initiatives to create supportive environment for private sector investment and to ensure transparency In the management, operation and fixation of tariffs in these sector. The aim of these initiatives is to protect consumers' interests but at the same time promoting competitive market to encourage private sector. By doing that, BERC helps government's endeavor to attract and sustain energy sector investment through mitigating investors' risk, building confidence in both consumers and investors, and encouraging investors by promoting a wider but fair and level playing market conditions.

BERC has also been organizing: 'Out-Reach' program at the grass root level to enhance exchange of information, to create awareness among the consumers and to resolve dispute between the end-users and service providers for better management in the energy sector. In addition to that, BERC has been following a standard procedure in decision-making process by conducting adjudicatory public hearings. This platform helps building confidence to consumers' rights and gives an opportunity to the investors and service providers to explain their respective positions which ultimately strengthens accountability and ensures transparency in the management of the energy sector.

In the fiscal year 2011-2012, the commission has issued 2 Independent Power producers (IPP), 4 Rental Power Producer (RPP), 1 Commercial Power Plant and 50 Captive Power generation licenses. It is noteworthy to mention here that BERC has issued total of 177 electricity licenses of which 117 are waiver licenses, with the production capacity of 984.803MW electricity. For storage, distribution and marketing of CNG and petroleum, BERC has issued 16 CNG and 66 petroleum licenses respectively in the 2012 fiscal year (till 30 June. 2012).

BERC has promulgated some important regulations for smooth functioning of the energy sector. In order to do that BERC has endorsed the creation of "Regulations for Gas Development Fund, 2011" which has been operating through the management of Petro Bangla. Moreover, BERC has introduced "The Regulations for Private Sector Participation in the Power Sector. 2008", according to which the Benchmark Indicative Tariff of Furnace oil and Dual-Fuel (Gas/Furnace Oil) has been fixed for commercial power stations and coal-based power stations. The impact of such regulation is that, investors will get a clear idea about tariff in advance. Apart from this, BERC has reduced license fees as well as renewal fees tor Captive Power Plant to encourage private sector investment in the energy sector, keeping in mind that it will assist to open-up a route for establishing new power plants in the country. Therefore, it is expected that consumers who do not get required power from national grid line will be benefited.

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 (2012) BPI has organized 309 training course / workshops / seminars and provided training to 5464 persons. In 2011-2012 financial year, the institute has trained up 234 officers working in oil, gas and mineral resources sector through 05 (five) training courses including Foundation Training course. A joint research titled "Petroleum System Analysis in Surma Basin, Bangladesh." (3rd Phase) has been coducted jointly by JGI, MOECO, ICEP, Petrobangla, BAPEX and BPI. Research report has been submitted to the Government. In the research report, researchers concluded positive indication of finding liquid hydrocarbon in greater Sylhet area.