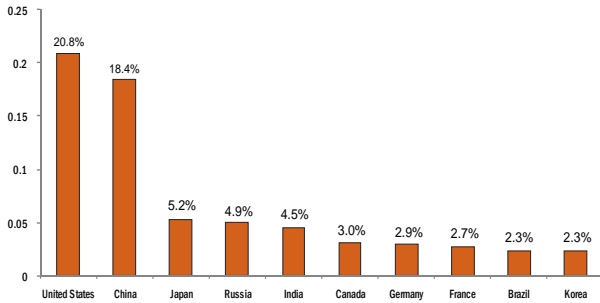


## Key Highlights

- Availability, accessibility and affordability are the parameters to ensure energy security; referred to as 3 A's. About 49 percent of total population of the country is under the umbrella of lighting including renewable and non-renewable energy sources along with captive power. Availability is linked to new electricity generation that has experienced a boost but at the cost of affordability. Electricity generation cost has increased significantly due to the commissioning of HFO fired power plants. So, the balance among 3 A's yet to be achieved.
- According to Bangladesh Power Development Board (BPDB), electricity demand experienced an average growth of about 7 percent since 1990. It is expected that electricity demand will be around or over 10 percent in forthcoming years in line with economic development of the country.
- Bangladesh adopted a private sector power generation policy in 1996 which was subsequently revised in 2004. The policy (together with other regulatory and policy documents) provides several incentives (including a 15-year corporate tax holiday) and attractive terms for private developers. Today, more than one-third of the total generation capacity of Bangladesh is in the hands of the private sector- testament to a successful policy and regulatory environment which has also seen the involvement of international developers as AES Corporation and Globeleq in the Bangladesh power sector. The government of Bangladesh guarantees the performance obligation of its entities such as power producer, power purchaser and fuel supplier etc. Any variation in price of fuel would be passed through to the power purchaser.
- At present, demand of natural gas is hovering around 3,043 Million Cubic Feet (MMCF) while current supply is about 2,064 MMCF. 158 MMCF gas will be added to the national grid in this year that will reduce the current deficit of 794 MMCF to about 600 MMCF. Bangladesh Petroleum Exploration and Production Company (BAPEX) and International Oil Companies (IOCs) are striving hard to explore new on-shore and off-shore gas fields, but they are yet to find a gas field with huge reserve which can be used for electricity generation. It is to be noted that natural gas is the cheapest primary fuel used for electricity generation over few decades in our country. Power generation is heavily dependent on this depleting mineral. Thus, fuel diversification needs to be given highest priority in order to ensure energy security of the country.
- As a short-term measure, the government has taken initiatives to augment the power supply through 3-5 year's rental and quick rental power plants. As an alternative energy solution, the plan was to commission base-load power plants run by coal (indigenous or imported) within this 3-5 years. Thus, electricity could have been provided at affordable price. However, the government has signed Memorandum of Understanding (MoU) for 1,320 MW coal fired power plants and more deals have been signed. But these coal based power plants will come into commercial operation not before than 2015-2016, if the power projects come in operation by stipulated schedule. By this time, many of the rental and quick rentals will become non-operative by policy terms. But there might not have any other option but to extend the terms of operation of these expensive HFO based power plants which may create inefficiency in the power sector.
- During the last three years, 49 power plants with a capacity of 5,319 MW have been set up. Of them, 24 plants generating about 2,000 MW have already gone into production. The other 25 plants, with capacity of 3,375 MW, are currently under construction are like to operational by middle of 2013 phase by phase.
- About 500 tonnes of furnace oil is required in 24 hours for generating 100 MW electricity in rental power plants. But it's not possible for Bangladesh Petroleum Corporation (BPC) to supply such huge quantity of fuel as it is currently running at over-capacity. Under these circumstances, the private power plant operators will be allowed to import fuel because of the inability of BPC to supply required petroleum fuel for them. 9.00 percent service charge will be paid to the private power companies for their import of petroleum oils under their own arrangement. This charge will be reviewed after one year. This provision may go either way; power generation companies will have uninterrupted fuel supply; only those availing infrastructure facilities; and some companies may exploit the option for unauthorized business of petroleum products.

Exhibit 1: Top 10 Electricity Producer in the World



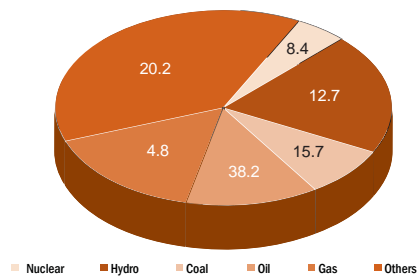
Source: International Energy Agency (IEA)

Many European countries play a prominent role in the global electricity trade. Paraguay, Canada and France are respectively the largest electricity exporter. Italy, Brazil and United States are respectively the major electricity importers in the world. Interestingly, most Asian countries are large producers of electricity but none made it into the list of prominent electricity exporters and importers. India is the only net importers of electricity.

### Electricity from Fossil Fuel

Coal has largest contribution in the global electricity production. Almost 40 percent of the global electricity is produced through coal while 20 percent is produced from gas. China is the largest coal based electricity producer in the world which satisfies 79 percent of its domestic electricity demand through coal. United States and India are respectively second and third largest coal based electricity producers in the world. United States satisfies 50 percent, while India meets almost 69 percent of its electricity demand from coal-based power plants.

Exhibit 3: Resources Contribution in Global Electricity Production



Source: International Energy Agency (IEA)

## The World of Power: A Global Scenario

### Prominent Power Players

Since 1973, global demand for electricity has witnessed robust growth and increased by over 200 percent in three decades. Total global electricity production jumped to 21,248 TWh in CY 2010 from 6,116 TWh in CY 1973 translating into a Compound Annual Growth Rate (CAGR) of 3.42 per annum. United States of America (USA) is the largest electricity producer of the world contributing 20.8 percent of the total global electricity production. Asian electricity giants namely China and Japan are the second and third largest electricity producer in the world with 18.4 percent and 5.2 percent share respectively in the cumulative global electricity production.

Exhibit 2: Prominent Power Players in the World

	Producers	TWh		Net Exporters	TWh		Net Importers	TWh
1	United States	4,165	1	Paraguay	45	1	Italy	45
2	Peoples Rep. of China	3,696	2	Canada	34	2	Brazil	40
3	Japan	1,041	3	France	26	3	United States	34
4	Russian Federation	990	4	Russian Federation	15	4	Finland	12
5	India	899	5	Czech Republic	14	5	India	10
6	Canada	603	6	Germany	12	6	Hong Kong (China)	8
7	Germany	586	7	Peoples Rep. of China	11	7	Argentina	6
8	France	537	8	Norway	9	8	Croatia	6
9	Brazil	466	9	Spain	8	9	Iraq	6
10	Korea	452	10	Ukraine	6	10	Hungary	6
	Rest of the World	6,620		Rest of the World	50		Rest of the World	68
	World	20,055		World	230		World	241

Source: International Energy Agency (IEA)

Fuel is the most expensive mean of producing electricity. With rising fuel oil prices in the global market, contribution of fuel oil in power generation has reduced substantially over past three decades. In 1970s, almost 25 percent of the global electricity used to be produced from oil which reduced to only 4.8 percent in CY 2010. However, except for India and China, most of the Asian countries still depend on fuel oil for power generation. Saudi Arabia and Japan are among top three oil based power generation countries in the world while Iraq, Kuwait, Pakistan and Indonesia also make the list of top ten oil based power generation nations of the world. On the contrary, gas contribution has increased from 12 percent in CY 1973 to 20.2 percent in CY 2010. United States, Russia and Japan are respectively largest gas based power generation countries in the world. Iran is the sixth largest gas based power generation country in the world and it satisfies almost 90 percent of its total domestic power demand from gas-based power plants.

Exhibit 4: Major Electricity Producers from Fossil Fuels

	Coal/Peat	TWh		Oil	TWh		Natural Gas	TWh
1	Peoples Rep. of China	2,913	1	Saudi Arabia	120	1	United States	950
2	United States	1,893	2	Japan	92	2	Russia Federation	469
3	India	617	3	Islamic Rep. of Iran	52	3	Japan	285
4	Japan	279	4	United States	50	4	United Kingdom	165
5	Germany	257	5	Mexico	46	5	Italy	147
6	South Africa	232	6	Iraq	43	6	Islamic Rep. of Iran	143
7	Korea	209	7	Kuwait	38	7	Mexico	138
8	Australia	203	8	Pakistan	36	8	India	111
9	Russian Federation	164	9	Indonesia	35	9	Spain	107
10	Poland	135	10	Egypt	30	10	Thailand	105
	Rest of the World	1,217		Rest of the World	485		Rest of the World	1,681
	World	8,119		World	1,027		World	4,301

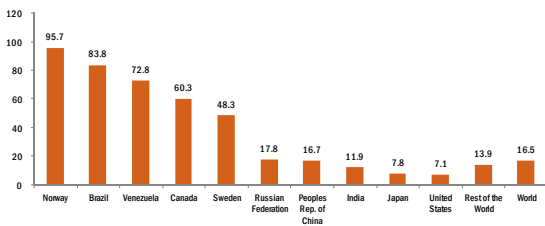
Source: International Energy Agency (IEA)

Despite relatively high capital costs and the need to internalize all waste disposal and decommissioning expenses, nuclear energy generation is at most still lower than that of through fossil fuel in most places. If the social, health and environmental costs of fossil fuels are also taken into account, electricity generated from nuclear sources proved out to be comparatively cheaper than the thermal generation means.

### Hydro Electricity

Over the past three decades, contribution of hydro electricity in global electricity production has reduced from 21 percent in mid 1970s to about 16 percent in CY 2010. China is the largest hydro electricity producer followed by Brazil and Canada. Almost 70 percent of the world's cumulative hydro electricity generation plants reside in only 10 countries of the world. Norway satisfies more than 95 percent of its total domestic electricity through hydro-based power plants.

Exhibit 7: Percentage of Domestic Electricity Needs Satisfied through Hydro Source

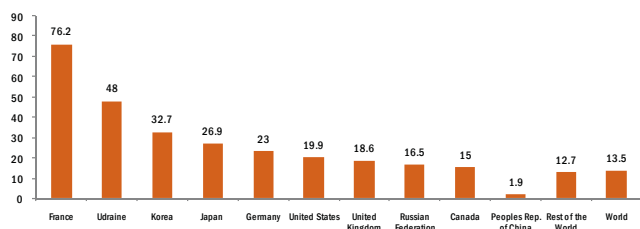


Source: International Energy Agency (IEA)

### Nuclear Electricity

Nuclear-based electricity production process has gained significant popularity in recent past and its contribution in global electricity production has surged to approximately 13 percent from merely 3.3 percent in mid 1970s. United States, France and Japan are respectively the largest producers of nuclear electricity in the world. 85 percent of the world's total nuclear electricity generation capacity resides in just 10 countries; with United States alone contributing almost 31 percent. France meets more than 75 percent of its domestic electricity requirements from nuclear-based power plants.

Exhibit 5: Percentage of Domestic Electricity Needs Satisfied through Nuclear Source



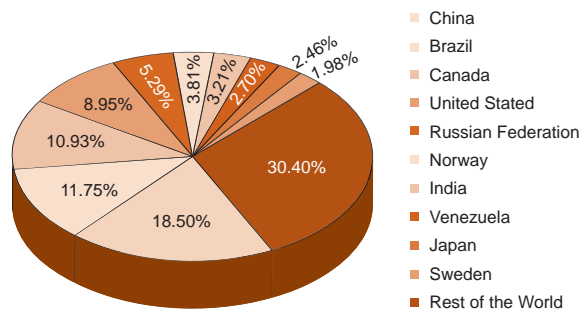
Source: International Energy Agency (IEA)

Exhibit 6: Top Ten Nuclear Electricity Producers in the World

	Producers	TWh		Installed Capacity	GW
1	United States	830	1	United States	101
2	France	410	2	France	63
3	Japan	280	3	Japan	49
4	Russian Federation	164	4	Russian Federation	22
5	Korea	148	5	Germany	20
6	Germany	135	6	Korea	18
7	Canada	90	7	Canada	13
8	Ukraine	83	8	Ukraine	13
9	Peoples Rep. of China	70	9	United Kingdom	11
10	United Kingdom	69	10	Sweden	9
	Rest of the World	418		Rest of the World	52
	World	2,697		World	371

Source: International Energy Agency (IEA)

Exhibit 8: Global Market Share of Major Hydro Electricity Producers



Source: International Energy Agency (IEA)

## Electricity Costing: A Comparison of Various Fuel Sources

According to a general study of external costs of various fuel cycles, nuclear energy incurs about one-tenth of costs of coal. External costs are the quantifiable costs in relation to health and environment which are not built into the cost of electricity. If these costs were in fact included, the European price of electricity from coal would double while that from gas would increase by 30 percent; that too without including the effects of global warming.

Even in hard cash terms, only wind energy is cheaper than nuclear energy which costs 0.1-0.2 Euro cents per Kwh. Nuclear energy costs around 0.4 Euro cents per Kwh; which includes all expenditures normally made for fuel management, plant decommissioning and final waste disposal. Electricity generated from gas costs around 2.0 Euro cents per Kwh, while generation costs of hydro and coal could range from 7.1 to 7.3 Euro cents per Kwh.

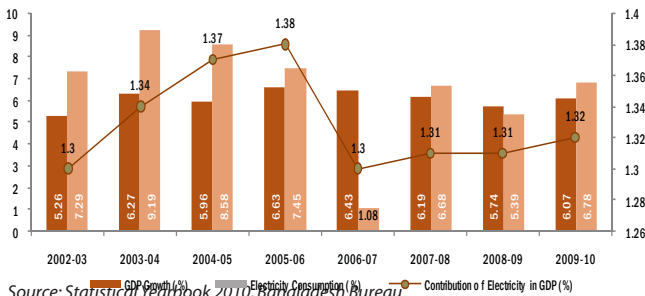
## Energy Sector of Bangladesh

### Background

Electricity was first installed at Dhaka in 1901, and in 1948, the Electricity Directorate was established in East Pakistan. During that period, the highest plant size was only 10 MW Steam Turbine in Siddhirganj along with other plants in Chittagong and Khulna. The construction of the Kaptai hydro-electric project with an installed capacity of 40 MW and commissioning of Dhaka-Chittagong 132 KV transmission line in 1962 was a milestone in the history of power development

in the country. Each year the demand is increasing at a rate of 10-12 percent or 800-1000 MW; the country's generation has to be increased by at least 8 percent each year. Besides, to ensure energy security, there should be an arrangement of 16-22 percent power to be reserved in both of public and private sectors through quality investment. To achieve the growth target of GDP, it is essential that the minimum electricity growth rate is maintained at a factor of 1.5 of GDP growth.

Exhibit 9: Contribution of Electricity in GDP, Electricity Consumption & GDP Growth



Source: Statistical Yearbook 2010, Bangladesh Bureau of Statistics

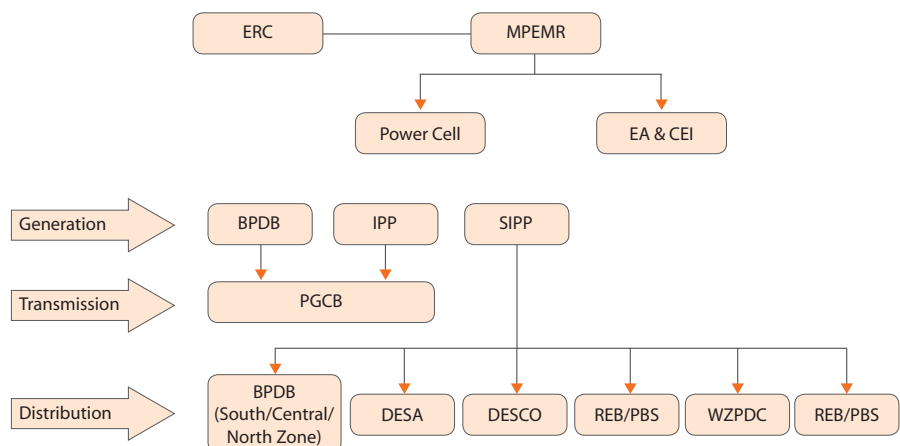
### Power Sector Structure

The local power sector is presently dominated by Bangladesh Power Development Board (BPDB), single buyer of electricity which will continue functioning except for some direct power purchase from small power producers by the utility. Multi Buyer or Competitive Pool may be adopted when the market becomes mature and stable. The state's control is likely to continue through the 'Electricity Act'. The power sector of Bangladesh is usually characterized by natural monopolies. Conventional wisdom states that since natural monopolies threaten competitive pressures, they should be regulated either by the government, independent regulatory agencies or directly by public enterprises. Moreover, allowing another firm would increase cost and efficiency. The power sector includes the generation, transmission and distribution of electricity through different governmental agencies.

### ABBREVIATIONS

ERC: Energy Regulatory Commission  
 MPEMR: Member of Power, Energy and Mineral Resources  
 EA: Electrical Advisor  
 CEI: Chief Electrical Inspector  
 BPDB: Bangladesh Power Development Board  
 IPP: Independent Power Producers  
 SIPP: Small Independent Power Producer  
 PGCB: Power Grid Company of Bangladesh Ltd.  
 DESA: Dhaka Electric Supply Authority  
 DESCO: Dhaka Electric Supply Company Ltd.  
 REB: Bangladesh Rural Electrification Board  
 WZPDC: West Zone Power Distribution Company Ltd.  
 PBS: Palli Biddyt Samity

Exhibit 10: Power Sector Structure of Bangladesh



Source: Power Cell, Power Division, Ministry of Power, energy & Mineral Resources

Exhibit 11: Per Capita Electricity Consumption (Kwh)

Country	Kwh
Bangladesh	236
Brazil	2,023.76
India	443.54
Nepal	79.68
Pakistan	388.1
SriLanka	388.09
Vietnam	552.85
Indonesia	504.43
China	2,443.57

Source: Different Websites

Demand for electricity is increasing with the improvement of living standard, increase of agricultural production, development of industries as well as overall development of the country; but due to the failure in the last few years to increase electricity generation capacity proportionately to the demand, there exists 1000-1500 Megawatt electricity shortage at present. Especially a huge shortage exists during the evening peak demand. Due to the crisis of gas supply, lack of necessary maintenance and rehabilitation of old power plants, it is not possible to utilize the total installed capacity. The shortage of electricity can be from the load-shedding made during the peak demand (5800 MW) of summer which is about 1500-1800 Megawatt each day.

Exhibit 13: Year Wise Electricity Generation Plans

Year	2010 (MW)	2011 (MW)	2012 (MW)	2013 (MW)	2014 (MW)	2015 (MW)	2016 (MW)
Public	255	851	838	1,040	1,270	450	1,500
Private	520	1,343	1,319	1,134	1,053	1,900	1,300
Total	775	2,194	2,157	2,174	2,323	2,350	2,800

Source: Bangladesh Power Development Board

## Demand Supply Scenario

Shortage of electricity may be considered in two forms. Firstly, reviewing the scenario of per capita electricity consumption and percentage of population having access to electricity in Bangladesh compared to other countries and secondly, determining gap between demand and supply of electricity in perspective of country's economic situation and GDP growth.

At present, our per capita electricity production is only about 236 Kwh. Comparing with per capita electricity consumption of BRICS countries (Brazil, Russia, India, China and South Africa) as well as SAARC ( South Asian Association for Regional Cooperation) countries such as Pakistan, Sri Lanka the per capital consumption of Bangladesh is very low. At present, about 49 percent of the total population of Bangladesh is enjoying electric facility.

Exhibit 12: Region wise Demand and Supply (considering Peak Time of August 2011)

Region	Demand (MW)	Load Shed (MW)
Dhaka	2085	366
Chittagong	535	143
Khulna	568	129
Rajshahi	515	107
Comilla	382	83
Mymensingh	280	63
Sylhet	275	34
Barisal	113	26
Rangpur	272	57
Total	5025	1008

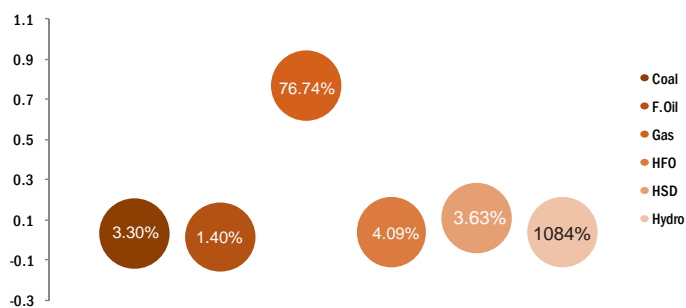
Source: Bangladesh Power Development Board

## Electricity Generation Overview

At present, Bangladesh has energy supply from both renewable and non-renewable sources, 38 percent of which comes from biomass. However, 75 percent of commercial energy is provided from natural gas. Currently, gas production per day is 2000 MMCF in our country. Usage of imported oil accounts for the lion's share of the rest of the energy requirement. Our annual requirement of fuel is approximately 70 lakh tonnes (estimated for FY 2011-12). Apart from natural gas and crude oil, coal is mainly used as fuel in the brick-fields and at the Boropukuria Thermal Power Plant. Moreover, power is also being generated by using solar home system in off grid areas. In addition, there are some poultry and dairy farms in which bio-gas plants are being set up and with this energy, power can be generated and is also used for cooking. The amount of power generation from such plants is currently about 1 MW. Steps have been taken to generate electricity by Bio-Mass Gasification Method in the country. There also exists bright potential to produce electricity from wind and mini-hydro or wave-energy. Recently, solar power based irrigation pump has been used in a number of areas of the country. Its wide use will lessen the pressure on diesel and electricity.

The installed capacity of power plants is about 6693 MW while the derated capacity is about 6601 MW as of February 2012. The nation satisfies most of its power needs by natural gas (76.74%). Due to acute shortage of natural gas in the country, complexity in approving national coal policy and costly alternative energy sources; most existing and upcoming power projects are fuel based (Diesel and Furnace Oil), which is the most expensive mean of electricity generation in Bangladesh. Only recently, government has focused more on coal-fired power plants.

Exhibit 14: Electricity Generation by Fuel Component



Source: Bangladesh Power Development Board & LBSL Research

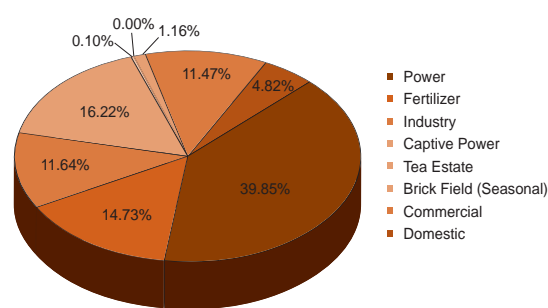
Exhibit 15: Total Gas Reserve, Extractable Gas and Cumulative Gas Production (Updated upto June 2009)

Gas Field	Recoverable Reserves (Proved + Provable)	Cumulative Production (Upto June 2009)	Remaining Recoverable Reserve (Proved + Provable)
<b>Producing</b>			
Bakhrabad	1,049.0	692.3	356.7
Habiganj	3852.3	1617.5	2234.8
Jalalabad	836.5	509.6	326.9
Kailashtilla	1903.3	466	1437.3
Meghna	119.6	35.8	83.8
Narsingdi	215.1	98.9	116.2
Rashidpur	1401.2	448.4	952.8
Sylhet	478.7	188.5	290.2
Sangu*	848.5	457.9	390.6
Salda Nadi	116.1	58.6	57.5
Titas	5127.5	2996.1	2131.4
Beanibazar	170.2	57.3	112.9
Fenchuganj	282.8	60.4	222.4
Feni	130	61.8	67.8
Moulvibazar	359.6	139.6	220
Bibiyana	2400.8	360.8	2040
Bangura	546	79.2	466.8
<b>Not in Production</b>			
Begumganj	32.7	0	32.7
Kutubdia*	45.5	0	45.5
Semutang	150.3	0	150.3
Shahbazpur	465.6	0	465.6
<b>Production Suspended</b>			
Chhatak	473.9	26.4	447.5
Kamta	50.3	21.1	29.2

Source: Energy and Mineral Resources Division  
\* Offshore Field

At present, from 79 wells of the existing 17 gas fields, only 730 BCF (Billion Cubic Feet) gas is being supplied against the average annual demand of 912 BCF. As a result, there exists a shortage of 182 BCF of gas annually. According to the projections by Energy and Mineral Resources Division, in 2014-15, total annual demand for gas will stand at 1335.0 BCF. If the present supply of 2.0 BCF per day remains unchanged then daily shortage may stand at 1.66 BCF on the basis of the projected demand.

Exhibit 16: Sector Wise Usage of Gas (percentage)



Source: Energy & Mineral Resources Division

The government has taken initiatives to explore offshore blocks signing Production Sharing Contract (PSC) to augment gas supply, but no success has yet been experienced. Bangladesh Petroleum Exploration and Production Company limited (BAPEX) has shown little success in exploring onshore gas fields. No such amount of gas has been explored that can be used in electricity generation. Under the circumstances, acuteness of gas supply can be mitigated through importing Liquefied Natural Gas (LNG). As a short-term measure, government should promote private sector to import LNG providing incentives. As a long-term solution, government should develop the infrastructure of LNG terminal to import LNG.

### Natural Gas: Fast Depleting Non-renewable Energy Source

Major source of our primary energy is natural gas as three-fourths of the total commercial energy is provided by natural gas. As many as 23 gas fields have been discovered since 1955 when the first gas field was found in Sylhet. Total reserve of extractable gas (proven and probable) is 20.5 Trillion Cubic Feet (TCF). As of April 2010, remaining reserve is 12 TCF since 8.5 TCF gas is being consumed so far. Daily gas supply shortage is about 794 MMCF against daily demand of gas is about 3043 MMCF.

Per capita consumption of energy in Bangladesh is on an average 160 kgoe (Kilogram Oil Equivalent) while it is 530 kgoe in India, 510 kgoe in Pakistan, 340 kgoe in Nepal and 470 kgoe in Sri Lanka. The average consumption in Asia is 640 kgoe. It is evident that per capita average consumption of energy in Bangladesh is significantly lower than the average of Asia. Even it is lower than those of South Asian countries.

### Coal: Should be Next Primary Fuel?

Bangladesh has a big reserve of some 3.4 billion tonnes of coal. Despite a huge deposit, the country now produces only about 2,000 tonnes of coal from Barapukuria coalmine a day, using underground mining method. The present extraction at Barapukuria is not even sufficient to run a 250 mn coal fired power plant. Bangladesh has six coal fields in northern Barapukuria, Phulbari, Khalaspur, Dighipara, Jamalganj and Kuchma.

Despite having big reserves, Bangladesh will have to import coal to run several proposed coal-fired power plants to be operational by 2014. Of the proposed plants the authorities have recently approved two coal-fired plants, each of 1,320 mw to be set up Chittagong and Khulna by 2015. Bangladesh Power Development Board (BPDB) and India's state-owned National Thermal Power Corporation will set up the plants under joint venture. To run the plants some 3.0 million tonnes of coal will be needed to be imported. The authorities also floated international bids to set up four coal-fired plants of up to 650 mw each, in Chittagong, Mawa and Khulna. Experts say that upto 90 percent of coal could be extracted through open-pit mining and that the country's estimated coal reserve is enough to generate electricity for 30 years.

Among the five coal mines, Boropukuria coal mine in Dinajpur has started commercial production by using underground mining method from September 2005 with the annual target of 10 lac MT of coal extraction. A 250 MW power plant has been running by using the extracted coal of Boropukuria through which power is being supplied to the National Grid. 7 lac MT coal, extracted from Boropukuria coal mine, is being used daily in this power plant. According to analysts, indigenous coal should be used as primary fuel to set up base-load power plants because indigenous coal would be less expensive and of better quality and environment friendly than that of imported coal. 'National Coal Policy' is yet to be finalized to this cause.

### Nuclear Energy: Far Cry!!

Since 1960s, a plan has been taken to establish a nuclear power plant in the country. But no effective action had taken in the last 50 years except land selection and acquisition for the nuclear power plant. Present Government, with the technical assistance of Russia, has made effective arrangement to establish a nuclear power plant with a capacity of 1000 MW in the pre-determined location at Rooppur. In this respect, Bangladesh government has signed a Memorandum of Understanding (MoU) with the Russian National Nuclear Institute. This includes taking necessary measures for installation of reactors for power generation and development of other infrastructures for setting up a nuclear power plant, supply of energy for the plant and operation and maintenance and the waste management of the plant.

Necessary fund provision, environmental safety, trained and efficient manpower in order to administer and maintain nuclear plant, awareness among general people regarding the risk and prevention of nuclear centre are the main concern of building up a nuclear plant. Recent Japan nuclear crisis has raised question about setting up a nuclear plant in Bangladesh; a natural disaster prone country, which does not possess such technological advancement to control any destructive mishaps.

Exhibit 17: Coal Reserves in Bangladesh

Sl. No.	Coal Fields	Discovery (Year)	Depth (Meter)	Area (Sq. Km.)	Proven Reserves (Mn tonnes)
1	Barapukuria, Dinajpur	1985	119-506	6.68	390
2	Phulbari, Dinajpur	1997	150-240	30.00	572
3	Khalaspur, Rangpur	1995	257-483	12.00	828
4	Dighipara, Dinajpur	1995	327	-	200 (Partly evaluated)
5	Jamalganj, Jaipurhat	1965	900-1000	16.00	1050
6	Kuchma, Bogra	1959	-	-	-

Source: The Financial Express & Different Websites

### Oil Fired Power Plants: Availability vs. Affordability

To augment the power supply to support increasing demand or alternatively, to maintain the demand-supply gap at a tolerable level, the government has taken initiatives to generate electricity on a fast track basis through rental, quick rental and Independent Power Producers (IPPs). During last three years, government has added 2894 MW of electricity to the national grid, most of which are run by costly furnace oil and diesel. Fuel import (by quantity) rose by 107.29 percent in FY 2010-11; it is assumed that fuel import will experience another 29.63 percent growth in FY 2011-12 to feed these power plants.

The government has planned to set up 33 power plants producing 5,857 MW of which 10 power plants will generate 2,785 MW in the public sector and another 23 plants will generate 3,072 MW in the private sector as Independent Power Producers (IPPs). So far, 49 power plants with a capacity of 5,319 MW have been set up. Of them, 24 plants generating about 2,000 MW have already gone into production. The other 25 plants, with capacity of 3,375 MW, are currently under construction are like to operational by middle of 2013 phase by phase. Among the 49 power plants, three with capacity of 265 MW are rental plants, 17 generating 1,388 MW are quick rentals, 1,656 MW generating 11 are IPPs and the remaining 18 plants generating 2,010 MW are government-owned. Among them, the three rental plants (265 MW), 13 quick rentals (1,088 MW) and eight plants (591 MW) have gone into operation. Of the remaining 25 under construction, there are four quick rentals (300 MW), 11 IPPs (1,656 MW) and 10 government-owned plants (1,419 MW).

### Energy Pricing: Should be at Market Price or Subsidized?

Generally, fuel price and electricity tariff is set at market price globally. Bangladesh is one of those countries that provide substantial subsidy for energy to producers and consumers; the financial cost of subsidies is funded directly out of the government budget. Justifications for the use of energy subsidies way from social welfare protection, job creation, the encouragement of new sources of energy supply, and economic development to energy security. However, large energy subsidies in our country also compete for limited resources that could otherwise be used to deliver other essential services, widen the scope for rent seeking and commercial malpractice, discourage both supply-side and demand-side efficiency improvement, promote noneconomic consumption of energy and can make new forms of renewable energy noncompetitive.

Buying fuel components at market price by government and selling these at subsidized price to producers, again buying electricity at high price from producers and selling it at subsidized rate to end users is the common way of delivering subsidy in Bangladesh. Other forms of subsidies are less transparent, including tax holiday provision, crosssubsidies across different consumer categories, subsidized loans and

other forms of assistance provided to producers or the industry, price caps benefitting consumers, trade restrictions and consumption targets or mandates that benefit producers, limits on market access.

Although the removal of subsidies can improve countries' fiscal and macroeconomic performance and lead to reduced energy consumption and hence reduced emissions, end users of energy will face higher prices. Household will face higher energy costs for those energy sources that they purchase, while intermediate users (factories, transport, etc.) facing higher costs on energy inputs may not be able to pass all of these on to purchasers. Businesses in the tradable sector in particular are constrained by international trade and may have to absorb some or all of the effects of energy subsidy removal. The reduction in subsidies therefore can create a class of consumers who are adversely affected by the change. There is then a balance of interest to consider between direct losers from subsidy reduction or removal and the wider benefits accruing from an improved fiscal position. This can create a short term disequilibrium in the economy until an equilibrium point is reached.

Exhibit 18: Fuel Price and Subsidy

Fuel Component	Current Price	(Subsidy)/Profit
Diesel	61	(18.00)
Kerosene	61	0.50
Furnace Oil	60	(8.00)
Petrol	91	0.50
95-Octane Gasoline	94	N/A

Source: The Financial Express and the Daily Star

Exhibit 19: Per Unit Electricity generation Cost (Approximate)

Electricity Generation Cost (Per Kwh)	
Energy Source	Cost (BDT)
Natural Gas	2-4
Local Coal	3-4
Imported Coal	4-6
Furnace Oil	7-8
Diesel	13-15
Nuclear	2-3
Solar	17
LNG	6-7

Source: Different Websites

Bangladesh has adopted an ad-hoc measure to augment electricity generation through rental and quick rental power plants that has magnified subsidy burden substantially as rental power is more expensive than base-load power plants run by natural gas. Thus, tariff adjustment at both bulk and retail level was a must to reduce the subsidy burden. The government raised the bulk tariff rate threefold in 2011 and bulk tariff will increase further by 14.37 percent from February 2012. To compensate the loss of electricity distribution companies, government also raised the tariff at retail twice in 2011 and retail tariff will experience another hike of 6.58 percent from February 2012. The petroleum sector was also in strain of high global price and demand pile subsidy pressure that imposed GoB to augment the petroleum price four times in 2011.

Exhibit 20: Bulk Tariff and Retail Tariff Hike

Time Scenario	Bulk Tariff (Per Kwh) in BDT	Value (BDT) Changes	% Increase	Retail Tariff (Per Kwh) in BDT	Value (BDT) Changes	% Increase
Till January 2011	2.32	-	-	4.00	-	-
From February 2011	2.61	0.29	12.50%	4.20	0.20	5.00%
From August 2011	2.80	0.19	7.28%	-	-	-
From December 2011	3.27	0.47	16.79%	4.71	0.51	12.14%
From February 2012	3.74	0.47	14.37%	5.02	0.31	6.58%

Source: The Financial Express and the Daily Star



## Stock Summaries

Exhibit 21: Top 5 Revenue Leader

Scrips	Absolute Basis (BDT Mn)	Scrips	Growth Basis (%)
Titas Gas	64,557.07	EASTRNLUB	85.44
DESCO	10,989.19	BEDL	49.07
KPCL	7,945.76	Mpetroleum	32.59
Power Grid	5,929.64	Summit Power	26.38
MJLBD	3,847.95	Jamuna Oil	22.3

Source: Company Financials & LBSL Research

Exhibit 22: Top 5 Bottom Line Leader

Scrips	Absolute Basis (BDT Mn)	Scrips	Growth Basis (%)
Titas Gas	7,333.06	Summit Power	63.86
DESCO	1,788.73	BEDL	60.82
Power Grid	1,607.01	MJLBD	48.1
Summit Power	1,144.58	Jamuna Oil	34.56
Jamuna Oil	564.07	Titas Gas	34.47

Source: Company Financials & LBSL Research

Exhibit 23: Top 5 Revenue Leader as of Latest Quarter 2011-12

Scrips	Absolute Basis (BDT Mn)	Scrips	Growth Basis (%)
Titas Gas	48,555.05	MJLBD	51.57
KPCL	8,900.03	KPCL	46.20
DESCO	8,882.47	Jamuna Oil	37.14
Power Grid	4,516.94	Summit Power	27.64
MJLBD	4,390.64	LINDEBD	17.43

Source: Company Financials & LBSL Research

Exhibit 24: Top 5 NPAT Leader as of Latest Quarter 2011-12

Scrips	Absolute Basis (BDT Mn)	Scrips	Growth Basis (%)
Titas Gas	5,139.53	BEDL	116.17
Power Grid	1,068.53	Jamuna Oil	113.11
DESCO	1,058.86	MJLBD	92.18
Summit Power	845.18	Mpetroleum	68.55
LINDEBD	490.43	KPCL	68.34

Source: Company Financials & LBSL Research

Exhibit 25: Top 5 Turnover Leader in DSE

Scrips	Yearly Average Turnover (BDT Mn)	Highest Turnover (BDT Mn)
Titas Gas	153.2	813.51
MJLBD	96.19	509.51
Summit Power	74.11	574.36
DESCO	57.44	336.87
Jamuna Oil	56.96	672.86

Source: LBSL Research

Exhibit 26: Adjusted Trailing P/E

Scrips	Adjusted P/E	Scrips	Adjusted P/E
Titas Gas	5.94	Power Grid	17.96
Jamuna Oil	8.42	BEDL	18.02
LINDEBD	11.67	MJLBD	19.88
Mpetroleum	9.15	KPCL	20.94
Summit Power	15.35	Eastern Lubricants	36.68
DESCO	16.19	BD Welding	88.42

Source: LBSL Research

Exhibit 27: Price Performance during 2011 (%)

Scrips	1M	3M	6M	12M
BDWELDING	0.89	(16.67)	(23.79)	(42.47)
BEDL	4.69	(27.12)	(25.25)	(26.48)
LINDEBD	(5.28)	(5.70)	(8.44)	(13.70)
DESCO	(0.70)	(8.46)	(15.73)	(30.09)
EASTRNLUB	15.00	(20.75)	(41.73)	(53.06)
Jamuna Oil	(22.12)	(30.03)	(28.63)	(35.78)
KPCL	0.48	(14.23)	(10.59)	(32.60)
MJLBD	(2.53)	(28.53)	(34.19)	-
MPetroleum	9.09	0.00	(9.39)	(23.67)
Power Grid	(8.19)	(15.39)	(18.88)	(28.92)
Summit Power	(3.98)	(20.45)	(9.12)	(31.03)
Titas Gas	(8.61)	(14.47)	(13.29)	(30.11)

Note: BEDL and MJLBD started trading in DSE from 19 May, 2011 and 26 June 2011 respectively. Thus the 12M price return is calculated based those trading date.

Source: LBSL Research

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