

Power Sector Development: Subsidy Issues



November 28, 2012

Present Power Generation Scenario: Increasing Trend of Oil Use

Bangladesh's Power Sector: At a Glance

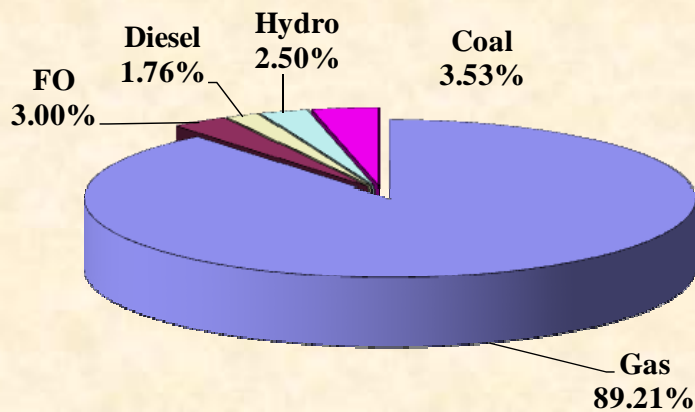
- Electricity Growth : 12.00 % (FY-2012) (Av. 7 % since 1990)
- Generation Capacity : 8275 MW (Sept, 2012)
- Total Consumers : 13.5 Million
- Transmission Lines : 8,900 km
- Distribution Lines : 2,81,000 km
- Per Capita Generation : 272 kWh (incl. Captive)
- Access to Electricity : 53 % (60 % Including non Grid)

Present Generation Capacity (Sept., 2012)

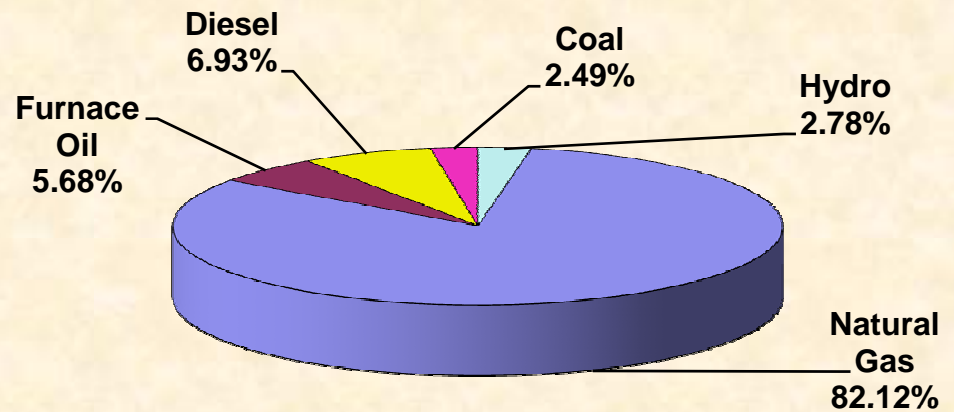
Public Sector			
SL.			Generation Capacity (MW)
1.	BPDB		3600
2.	APSCL		682
3.	EGCB		210
4.	RPCL		52
		Subtotal	4,544 (55%)
Private Sector			
1.	IPPs		1297
2.	SIPPs (BPDB)		99
3.	SIPPs (REB)		226
4.	15 YR. Rental		169
5.	3/5 YR. Rental		1940
		Subtotal	3,731 (45%)
		Total	8,275

- Considering 20 % Maintenance and Forced Outage, Available Generation Capacity is about 6600 MW without fuel constraint

Energy Generation by Fuel Type in FY 2010 and FY 2011



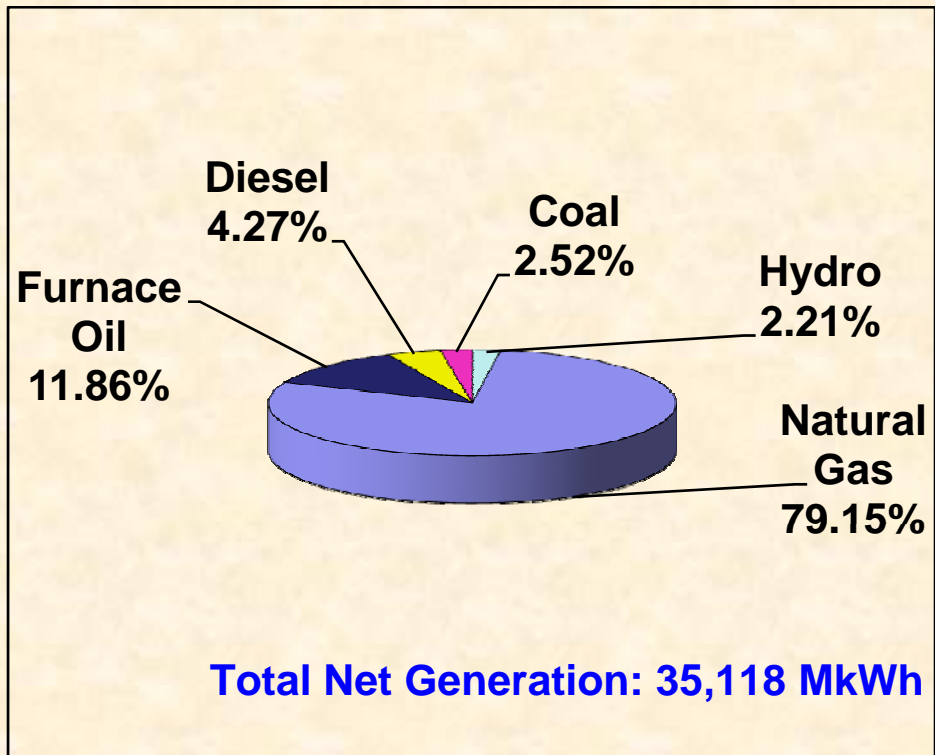
Energy Generation(FY10): 29,247 M kWh



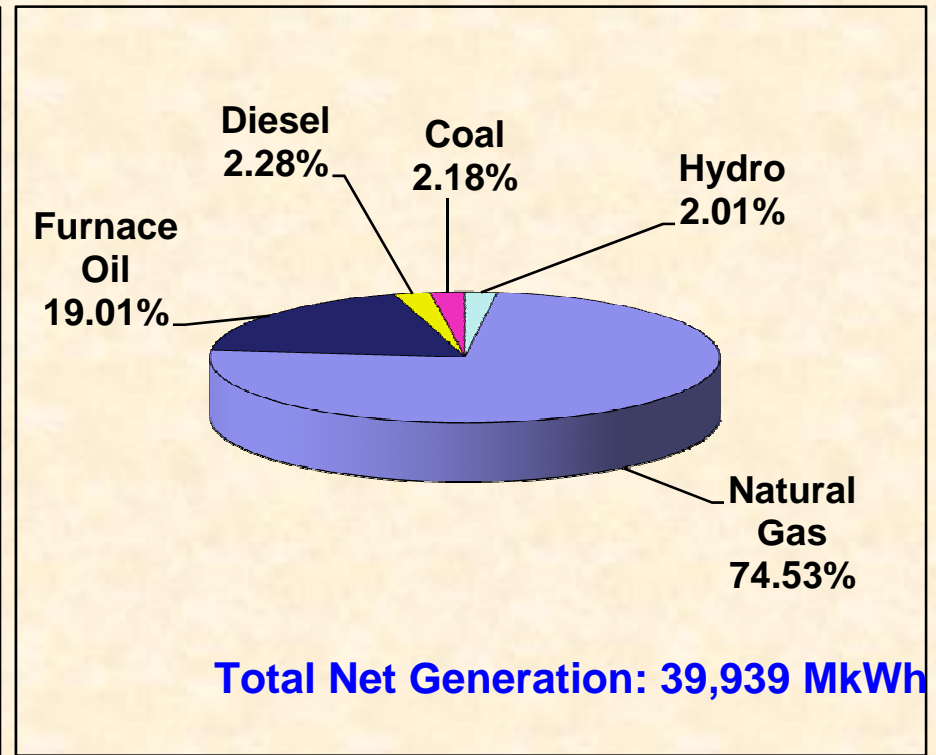
Energy Generation (FY 11): 31,355 M kWh

- Energy Growth in FY 11 is about 7.20 %
- High Dependence on Gas

Energy Generation by Fuel Type: FY 2012 and FY2013 (expected)



FY-2012



FY-2013 (expected)

Planning Perspective

Strategic Policy on Power

- Fuel diversity and sustainable supply of fuels
- Private sector participation in power generation
- Harnessing renewable energy sources
- Demand Side Management (DSM) and Energy Efficiency improvement program
- Cross Border Power Trade
- Rationalize power tariff and “life line” tariff

Primary Fuel Supply Options

- **Gas:** Only 16 tcf proven reserve; No significant gas discovery in recent years; Depleting gas reserve restricts gas based generation expansion
- **Hydro:** Present capacity 230 MW and average energy generation- 800 GWh; No further significant potential
- **Coal:** Total 3.2 billion ton reserve in 5 mines; Near term option; Indigenous or Imported; Base Load
- **Oil:** Volatile market; High price; For peaking duty only
- **LNG:** Necessary to ensure secure and reliable gas supply
- **Nuclear:** Safe technology; No pollution; Future Base Load option
- **Renewable:** Present capacity only 70 MW; still high cost

Gen Project Implemented Since 2009 and Plan for 2012 - 2016

Plants Commissioned During 2009 - 2011

YEAR	2009 (MW)	2010 (MW)	2011 (MW)	TOTAL (MW)
Public		255	800	1055
Private	356	270	125	751
Q. Rental		250	838	1088
Total	356	775	1763	2894

- In 2011, 1763 MW commissioned against plan for 2194 MW; 80 % success rate

Calendar Year Wise Projects Completion (From 2012 to 2016)

YEAR	2012 (MW)	2013 (MW)	2014 (MW)	2015 (MW)	2016 (MW)	TOTAL (MW)
Public	632	737	2426	934	700	5429
Private	344	1413	892	1822	2135	6491
Power Import		500				500
Total	976	2650	3318	2641	2835	12,420

Fuel Mix up to 2017

CY	Gas + LNG		Hydro		Coal (Dom + Imp)		Power Imp + Renewable		Oil		Total (MW)
	Capacity (MW)	%	Capacity (MW)	%	Capacity (MW)	%	Capacity (MW)	%	Capacity (MW)	%	
2011	5107	67%	220	3%	200	3%	0	0%	2086	27	7,600
2012	5730	67%	220	3%	200	2%	0	0%	2400	28	8,500
2013	6301	59%	220	2%	200	2%	500	4%	3500	33	10,700
2014	7982	60%	220	2%	200	1%	505	4%	4426	33	13,300
2015	9569	61%	220	1%	766	5%	612	4%	4426	29	15,500
2016	10332	58%	220	1%	2838	16%	612	3%	3794	22	17,800
2017	10933	57%	220	1%	4038	21%	612	3%	3494	18	19,200

Estimated Demand Supply Gap up to 2016 (Calendar Year)

Scs.3- Gas no retirement

Year	2012	2013	2014	2015	2016
Max.Demand with DSM (In April)	7518	8349	9268	10283	11405
Gen addition - Public Sector	632	737	2426	934	700
Gen. addition - Private Sector	344	1413	892	1707	2135
Regional Power Imp		500			
Capacity Retired	40	344	649	462	632
Gen. Capacity (End of Dec)	8549	10855	13524	15703	17906
NET	8207	10475	13051	15153	17279
Dependable Capacity (End of Dec)	6401	8485	10571	12274	13996
Max Surplus/Shortfall (In Summer)	-1117	136	1303	1991	2591
	-15%	2%	14%	19%	23%

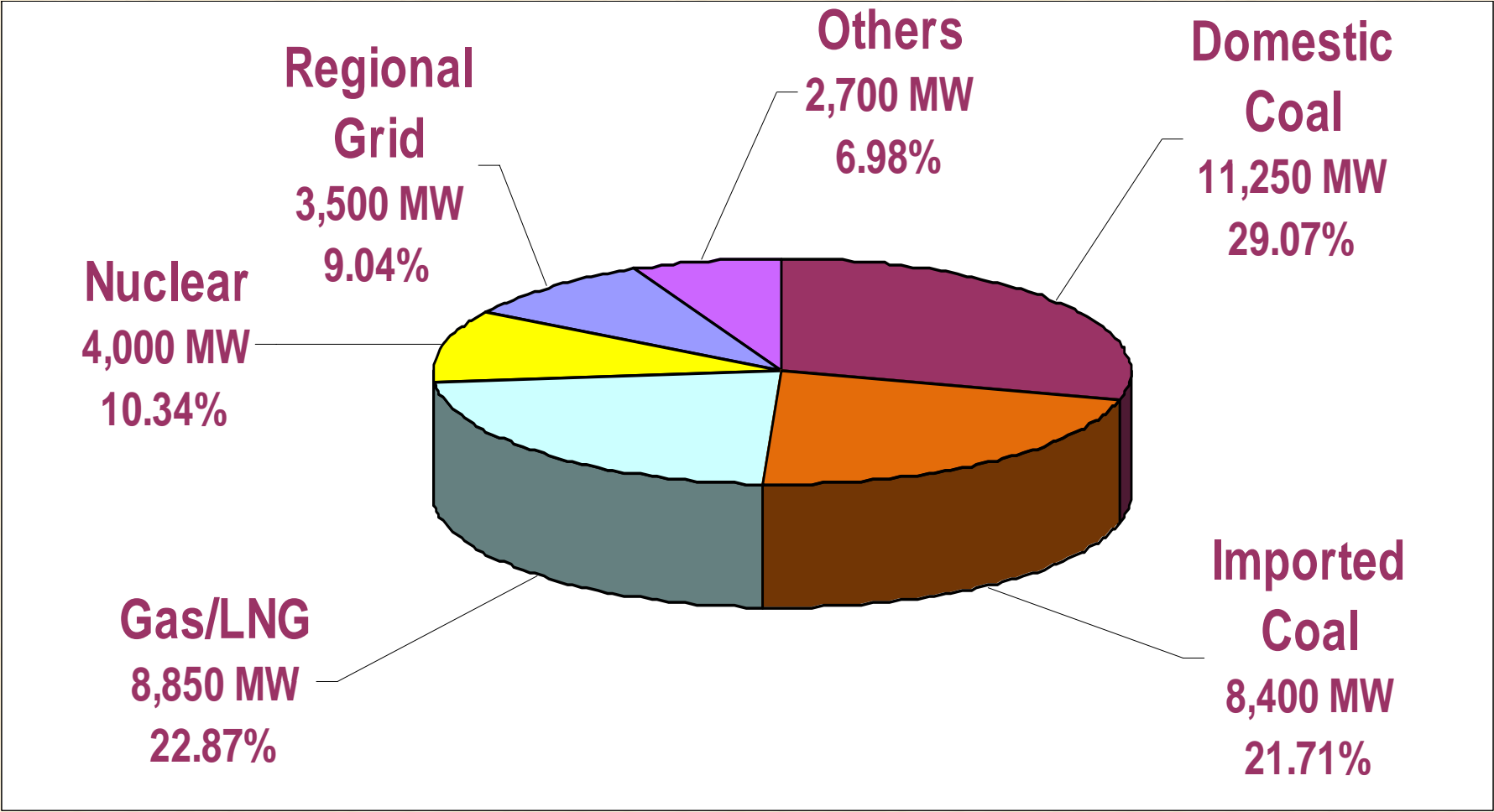
PSMP-2010

(2011 – 2030)

Power System Master Plan (up to 2030)

- **Updates of PSMP 2006:** Due to change of planning perspective
- **PSMP 2010 :** Long term planning up to 2030
- **Study completion:** February 2011
- **Findings:**
 - Generation capacity requirement by 2021: 24,000 MW
 - Generation capacity requirement by 2030: 39,000 MW
 - Coal based generation capacity by 2030: 20,000 MW
 - Coal and Nuclear for base load power requirement
 - Cross Boarder Trade with neighboring countries

Probable Power Generation: Primary Fuel Sources by 2030



Total Generation Capacity in 2030: 38,700 MW

Road Map for Coal Power Development (as of 2030)

Domestic Coal

K-D-P 6x1000 MW USC

K-D-P 8x 600 MW USC

Import Coal

Meghnaghat 2x600MW

Zajira/New Meg 3x600MW

Chittagong 3x660MW

Moheshkhali/Matarbari 4x600MW

Khulna 2x660MW (Dom Future)

Total 19,200MW (New)

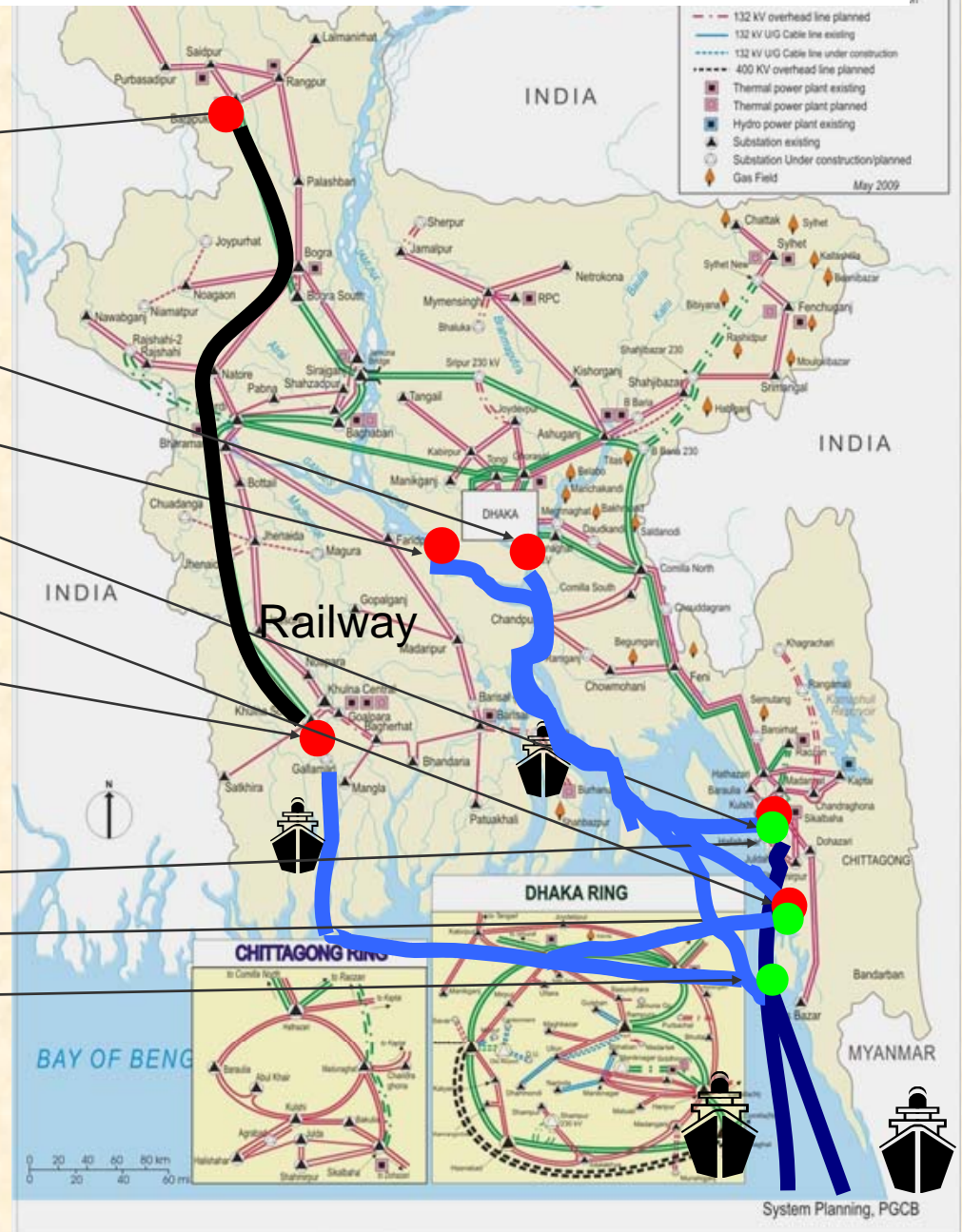
Coal Center

Chittagong

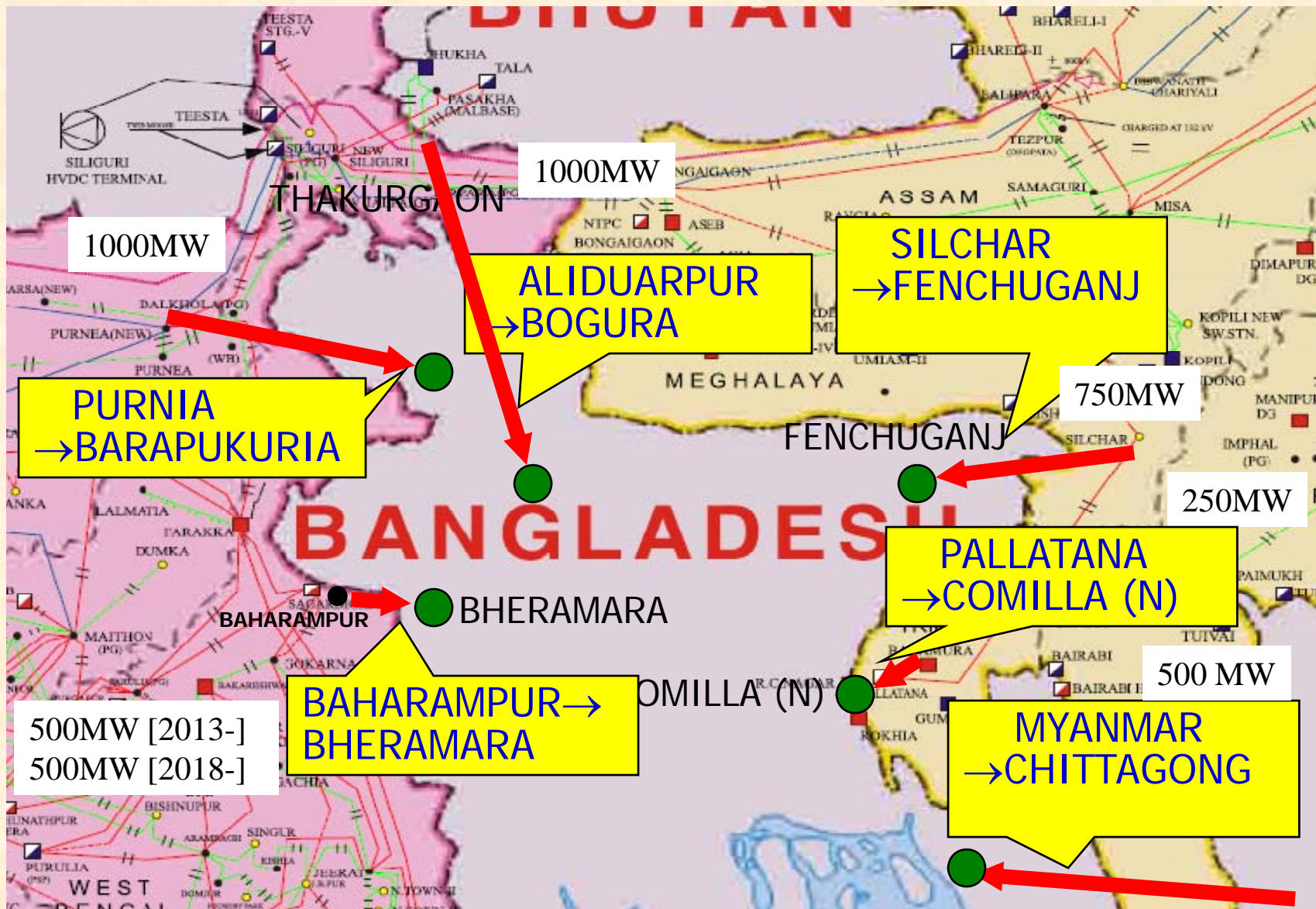
Matarbari

Sonadia Island

- : Potential Coal PS
- : Potential Coal Center
- : Ocean-going vessel
- : Transship



Regional Power Exchange: Possibilities



Challenges

Primary Fuel Supply

- Enhanced Gas Exploration, Production
- Domestic coal development
- Coal Import (long term contract) and deep sea port for coal handling
- LNG import

Project Financing

- Ensuring financing for Public and Private sector projects
- Availability of foreign currency

Transportation of fuel and equipment

- Infrastructure development by Railway and R&H
- Dredging of river routes by BIWTA
- Capacity build up of BPC, Railway, R&H and BIWTA etc.

Human Resources Development

- Development of skilled manpower: adopt and operate new technology

Tariff and Subsidy

Historical Fuel Price Increase

Effective Date	GAS (Taka/1000 Cft)	HFO (Tk/Liter)	HSD (Tk/Liter)	COAL (US\$/ M.Ton)
15.03.2009	73.91	26.00	42.71	71.5
01.08.2009	79.82	26.00	42.71	71.5
01.07.2010	79.82	26.00	42.71	84.00
01.01.2011	79.82	35.00	42.71	84.00
01.04.2011	79.82	40.00	42.71	84.00
05.05.2011	79.82	42.00	46.00	84.00
19.09.2011	79.82	50.00	51.00	84.00
11.11.2011	79.82	55.00	56.00	84.00
30.12.2011	79.82	60.00	61.00	84.00
01.02.2012	79.82	60.00	61.00	105.00

Tariff Adjustment

- Average Cost in FY 2012 : 5.50 Tk/kWh
- Average Cost in FY 2012 : 6.04 Tk/kWh
- Present Bulk Tariff (since Sep 2012): 4.70 Tk/kWh- 100 % increased from 2011
- Average Purchase Oil Plants: HSD – 16 Tk/kWh; FO – 14 Tk/kWh
- Bulk Tariff Increased since Oct 2008
 - From Feb 2011: 11 % and from Aug 2011: 6 %
 - From Dec 2011: 16 % and from Feb 2012: 14 %
 - From March 2012: 7 % (Fuel Price Adjustment)
 - From September 2012: 17 %

Gap between Supply Cost and Bulk Tariff In FY - 2012

FY – 2012														
SI No		July	Augu.	Sept.	Octo.	Nove.	Dece.	Janu.	Febr.	March	April	May	June	Total
1	Total Generation (MkWh)	2923	3022	2909	3044	2309	2404	2554	2532	2850	2692	3010	3087	33335
2	Energy Available at Bulk Level	2835	2931	2822	2953	2239	2332	2478	2456	2764	2611	2920	2994	32335
3	Fuel Cost (M. Tk)	5987	6158	5873	6112	5919	6349	6440	6923	7126	7015	7160	7396	78459
	Non Fuel Cost (M. Tk)	9276	9658	8806	11559	4532	5842	8410	8160	8786	5166	7685	8347	96226
	Total Generation Cost (M. Tk.)	15263	15816	14679	17671	10451	12191	14850	15083	15912	12181	14845	15743	174686
4	Per Unit Supply Cost (Tk/kWh)	5.38	5.40	5.20	5.98	4.67	5.23	5.99	6.14	5.76	4.66	5.08	5.26	5.40
5	Tariff (Tk/kWh)	2.61	2.813	2.813	2.813	2.813	3.27	3.27	3.74	4.02	4.02	4.02	4.02	
6	Energy Sales (M. Tk)	7400	8246	7938	8306	6299	7625	8102	9185	11112	10497	11738	12036	108485
7	Loss/Gain (M. Tk)	-7864	-7570	-6741	-9365	-4152	-4566	-6748	-5898	-4800	-1684	-3107	-3707	-66201

SI No		July	Aug.	Sept.	Octo.	Nove.	Dece.	Janu.	Febr.	March	April	May	June	Total
1	HFO (Million Liter)	82	97	90	111	40	56	77	83	91	41	75	80	923
2	HSD (Million Liter)	80	73	64	76	14	15	30	20	17	5	10	16	417
	Total (Liquid Fuel) (M.L)	161	169	154	187	54	71	107	103	108	46	85	96	1341

Gap between Supply Cost and Bulk Tariff In FY - 2013

FY - 2013														
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total	
Total Generation (M kWh)	3513	3512	3300	3396	3036	3076	3238	3091	3676	3652	3905	3760	41156	
Energy Available at Bulk Level	3408	3407	3201	3294	2945	2983	3141	2998	3566	3543	3788	3647	39921	
Fuel Cost (MTaka)	11325	10854	11443	11776	8937	9188	9391	9434	14163	14803	16853	15982	144148	
Non Fuel Cost (M Taka)	8001	8002	7849	7805	7793	7812	7865	7792	8171	8316	8724	8696	96824	
Total Generation Cost (M Taka)	19326	18855	19291	19581	16731	17000	17256	17225	22334	23119	25576	24678	240972	
Per Unit Supply Cost (Tk/kWh)	5.67	5.53	6.03	5.94	5.68	5.70	5.49	5.75	6.26	6.53	6.75	6.77	6.04	
Tariff (Tk/kWh)	4.02	4.02	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70		
Energy Sales (M Taka)	13699	13696	15043	15482	13842	14022	14763	14092	16758	16651	17805	17142	182996	
Loss/Gain (M Taka)	-5626	-5160	-4248	-4099	-2889	-2978	-2493	-3133	-5576	-6468	-7771	-7536	-57976	

AMOUNT RECEIVED FROM GOVERNMENT (SUBSIDY)

in Million Tk. FY 2006-07 to 2011-12

Financial Year	IPP	Rental	Quick Rental	Total
FY 2006-2007	3000			3000
FY 2007-2008	6000			6000
FY 2008-2009	6000	4070		10070
FY 2009-2010	6000	3940		9940
FY 2010-2011	9710	13,270	17,020	40000
FY 2011-2012	5520	13,030	50,020	63570
Grand Total				132580
FY 2012-2013 Expected Maxm				58,000

➤ Amount of Subsidy for Power Sector: **58 Billion TK.**

Liquid Fuel Requirement In FY - 2013

In Million Liter

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1	Gas (Million CFD)	877	890	848	848	813	800	862	897	905	901	905	911	
2	HFO (Million Liter)	112	105	126	130	101	104	104	107	167	180	212	200	1649
3	HSD (Million Liter)	31	30	24	24	10	11	11	10	24	23	24	23	246
	Total (Liquied Fuel)	143	135	150	154	111	115	115	117	191	203	236	224	1895

➤ Amount of Subsidy in Liquid Fuel Used for Power Generation

- HFO: 1649 Million X Tk 5 = 8245 Million Tk

- HSD: 246 Million X Tk 15 = 3690 Million Tk

Total: 11.9 Billion Tk

Tariff Adjustment: Proposal from Power Sector to Reduce Subsidy

- Subsidy Requirement in FY 2013:
 - Power: 707 M US \$
 - Liquid Fuel for Power: 145 M US\$
 - Total: 852 M US\$
- Cost reflective tariff to make sector entity viable
- Lifeline tariff to lessen burden on poor customers
- Fuel pass-through in tariff to tackle volatile fuel market

Thank You