

Bangladesh

Cross Border Power Trade: Issues and Challenges

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Economy of Bangladesh at a Glance

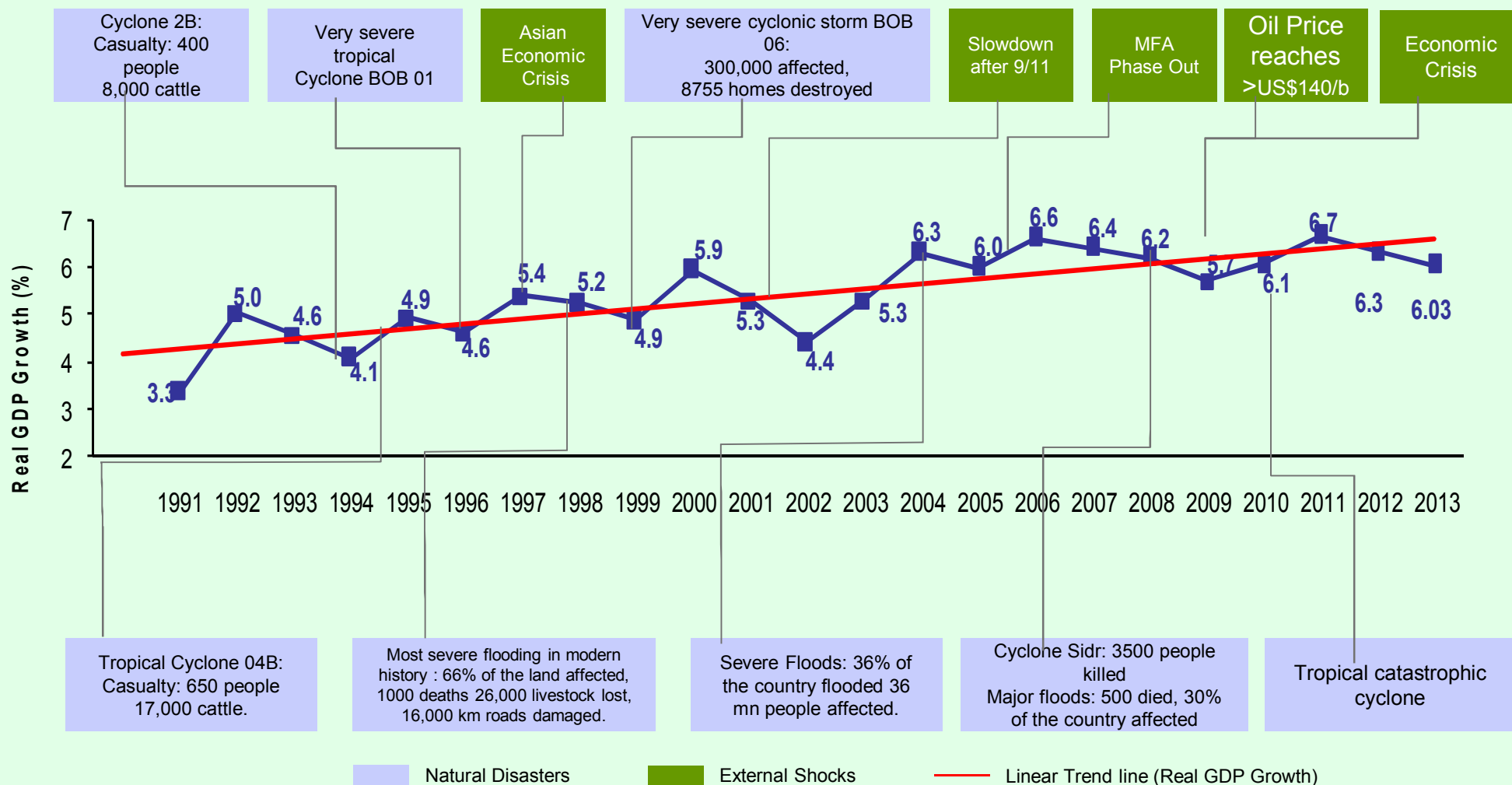


- **Official Name : People's Republic of Bangladesh**
- **Political System: Parliamentary Democracy**
- **Area : 147,570 km²**
- **Population : 154 million**
- **Total Exports : USD 27 billion (FY2013)**
- **Total Imports : USD 34 billion (FY2013)**
- **Remittance : USD 14.5 billion (FY2013)**
- **Forex Reserve : USD 20 billion**
- **GDP Per Capita : USD 1044 (FY 2013)**
- **Power Capacity : 10,000 MW**

GROWTH IS REMARKABLY STABLE AGAINST ALL SHOCKS

Resilient growth despite regular political, environmental and external setbacks

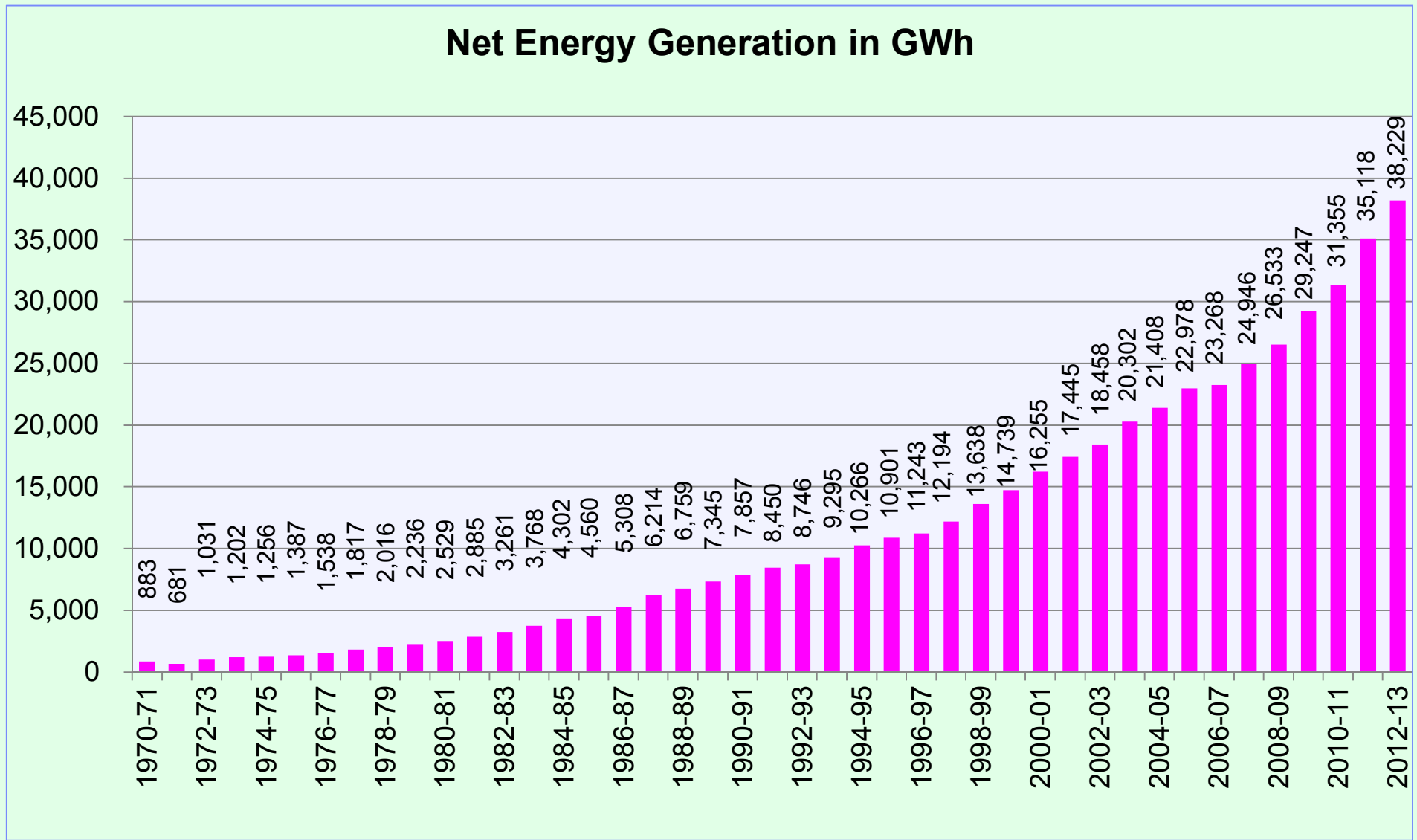
Bangladesh has maintained consistent growth and never defaulted on its internal or external debt obligations despite the Asian and Global Financial Crises, numerous political upheavals and countless natural disasters. This consistency is practically unrivaled amongst countries of a similar level of development



GDP Growth, Electricity Demand and Challenges

- With sustained GDP Growth, Electricity demand is increasing at a rate of 9 -12 %
- To meet this demand growth, power sector is facing challenges mainly:
 - Shortage of primary fuel supply from indigenous resources
 - Financing capital intensive power projects

Historical Energy Net Generation (GWh) in Bangladesh



Strategic Policy on Power

- Fuel diversity and sustainable supply of primary fuel
- Private sector participation in power generation
- Harnessing renewable energy resources
- Demand Side Management (DSM) and Energy Efficiency improvement program
- Regional Co-operation on Cross Border Power Trade

Bangladesh's Power Sector: At a Glance

- Installed Generation Capacity : 10,351 MW
- Electricity Growth : 9 -12 %
- Total Consumers : 14.2 Million
- Transmission Lines : 9,300 km
- Distribution Lines : 290,000 km
- Per Capita Generation (Inc Captive) : 321 kWh
- Access to Electricity (Inc 7% RE) : 62 %

Present Power Market in Bangladesh

Present Structure of Power Sector

- ***Apex Institution***

Power Division, Ministry of Power, Energy & Mineral Resources (MPEMR)

- ***Regulator***

Bangladesh Energy Regulatory Commission (BERC)

- ***Generation***

- ◆ Bangladesh Power Development Board (BPDB)
- ◆ Ashuganj Power Station Company Ltd. (APSCL)
- ◆ Electricity Generation Company of Bangladesh (EGCB)
- ◆ North West Power Generation Company Ltd. (NWPGCL)
- ◆ Coal Power Generation Company Bangladesh Ltd. (CPGCL)
- ◆ Independent Power Producers (IPPs)

- ***Transmission***

- ◆ Power Grid Company of Bangladesh Ltd (PGCB)

- ***Distribution***

- ◆ Dhaka Power Distribution Company (DPDC)
- ◆ Dhaka Electric Supply Company Ltd (DESCO)
- ◆ Bangladesh Power Development Board (BPDB)
- ◆ West Zone Power Distribution Company (WZPDC)
- ◆ Rural Electrification Board (REB) through Rural Co-operatives

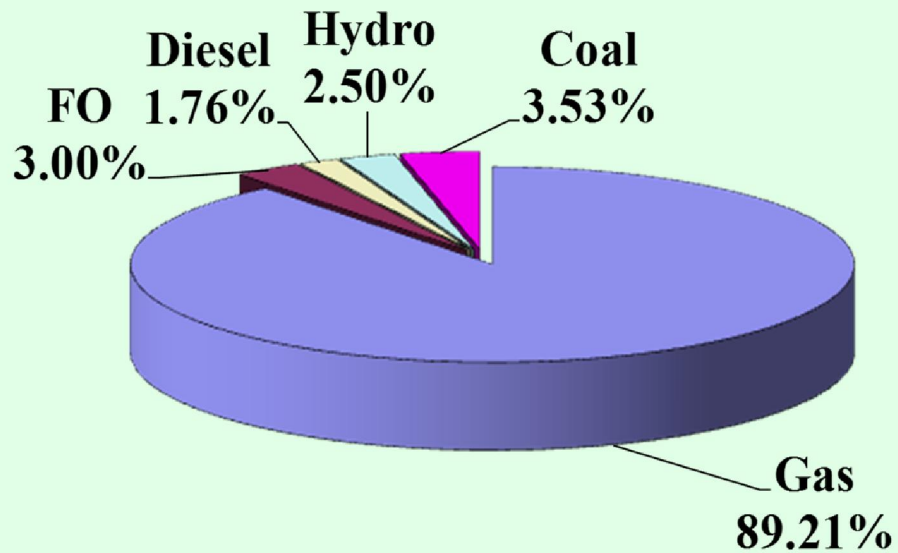
Single Buyer Power Market

- **BPDB Acts as a Single Buyer**
- **Purchaser & Seller of power as a “Single Buyer”**
 - **Purchase electricity from generators (public and private) under long term PPA**
 - **Sells to distribution entities at Bulk Tariff, set by BERC**
 - **BPDB responsible for demand-supply balance and prepare least cost generation expansion plan**

Primary Fuel Supply Options and Generation Plan

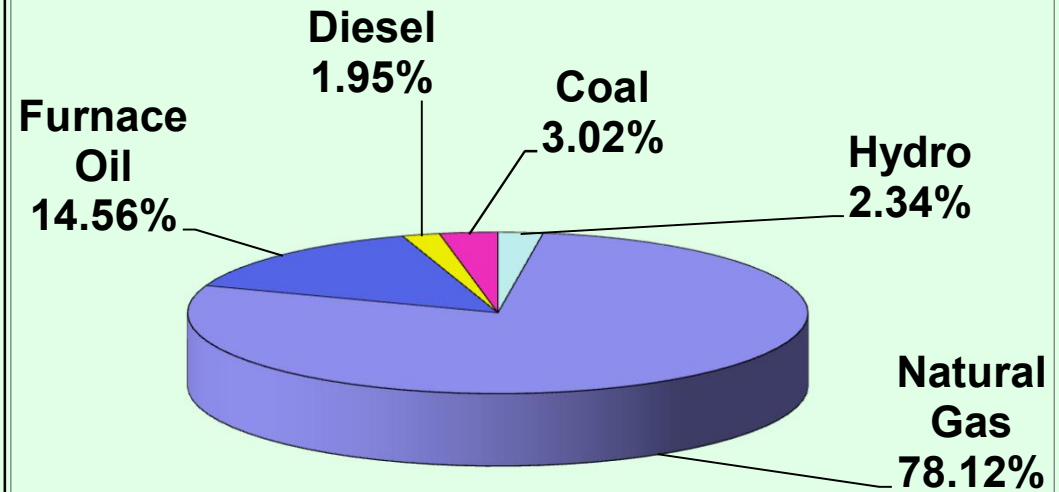
Fuel Mix: FY-2010 & 2013

FY-2010



Total Net Generation : 29,247 M kWh

FY-2013



Total Net Generation : 38,229 M kWh

Primary Fuel Options: Indigenous Resources

- **Gas:** Only 16 tcf proven reserve; No significant gas discovery in recent years; Depleting gas reserve restricts gas based generation expansion; R/P ration is only about 20 years.
- **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; Base Load; Mines are in densely populated areas
- **Renewable:** Present capacity only 120 MW; Mostly SHS; still high cost

Primary Fuel Supply Options: Import

Import Options as Indigenous resources are Inadequate

- Coal Import: Indonesia, Australia, South Africa
- LNG Import
- Oil- Volatile Market
- Nuclear
- Regional Hydro Power Import- Cross Border Power Trade

Power Generation Plan: Primary Fuel Sources by 2030

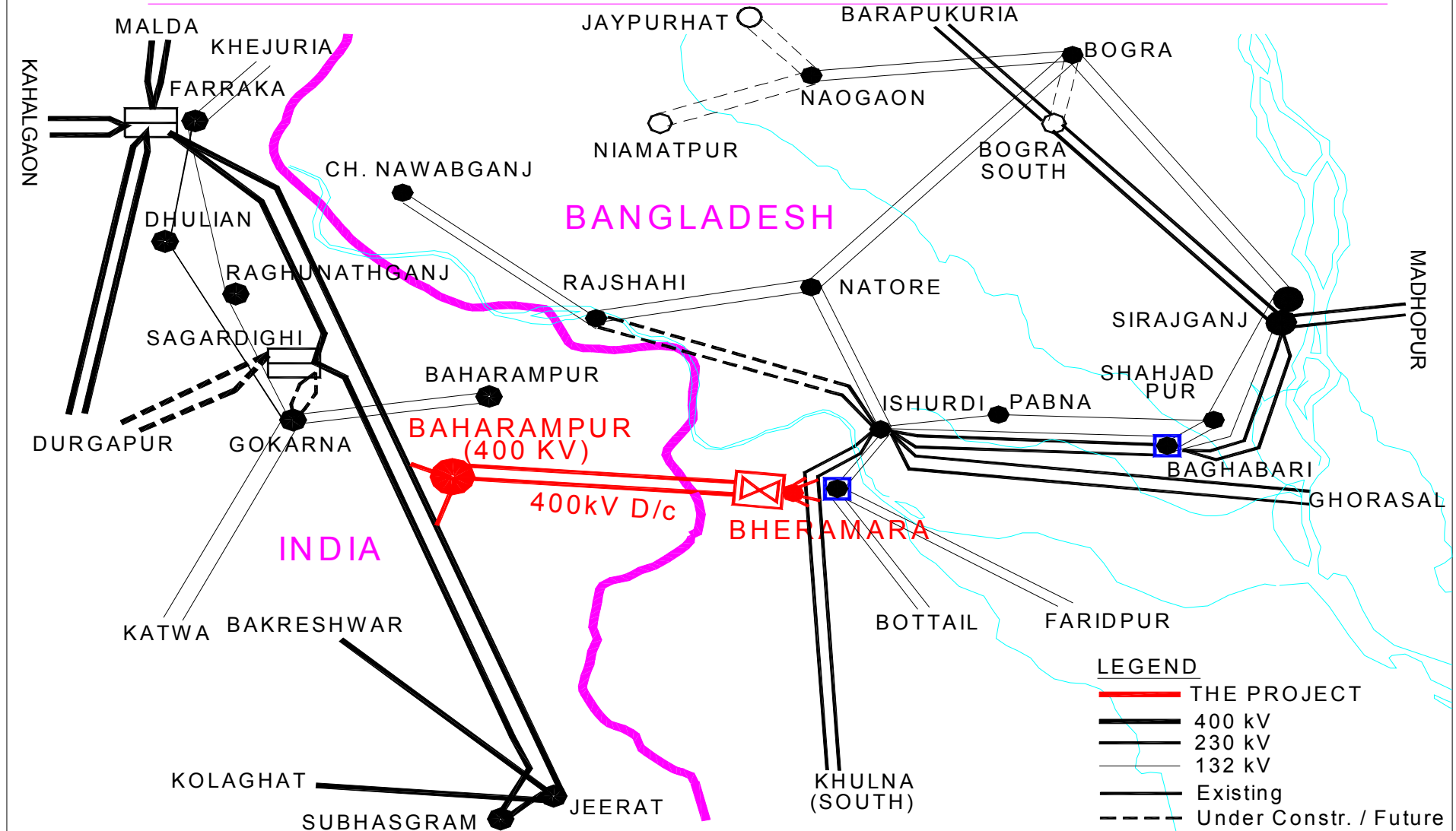
Sl. No.	Description	Capacity (MW)	%	Possible Location (s)
1	Domestic Coal	11,250	51	North West Region at Mine Mouth
2	Imported Coal	8,400		Chittagong and Khulna
3	Domestic Gas/LNG	8,850	23	Gas- Near Load Centers LNG- Near Costal Area
4	Regional Grid	3,500	9	Bahrampur - Bheramara, Silchar - Fenchuganj, Purnia- Barapukuria- Bongaigaon, Myanmar - Chittagong
5	Nuclear	4,000	10	Rooppur
6	Others (Oil, Hydro and Renewable)	2,700	7	Near Load Centers
Total		38,700		

Issues and Challenges in Regional Power Exchange

Regional Power Exchange: Possibilities



INTERCONNECTION BETWEEN INDIA AND BANGLADESH GRIDS



Present Power Import

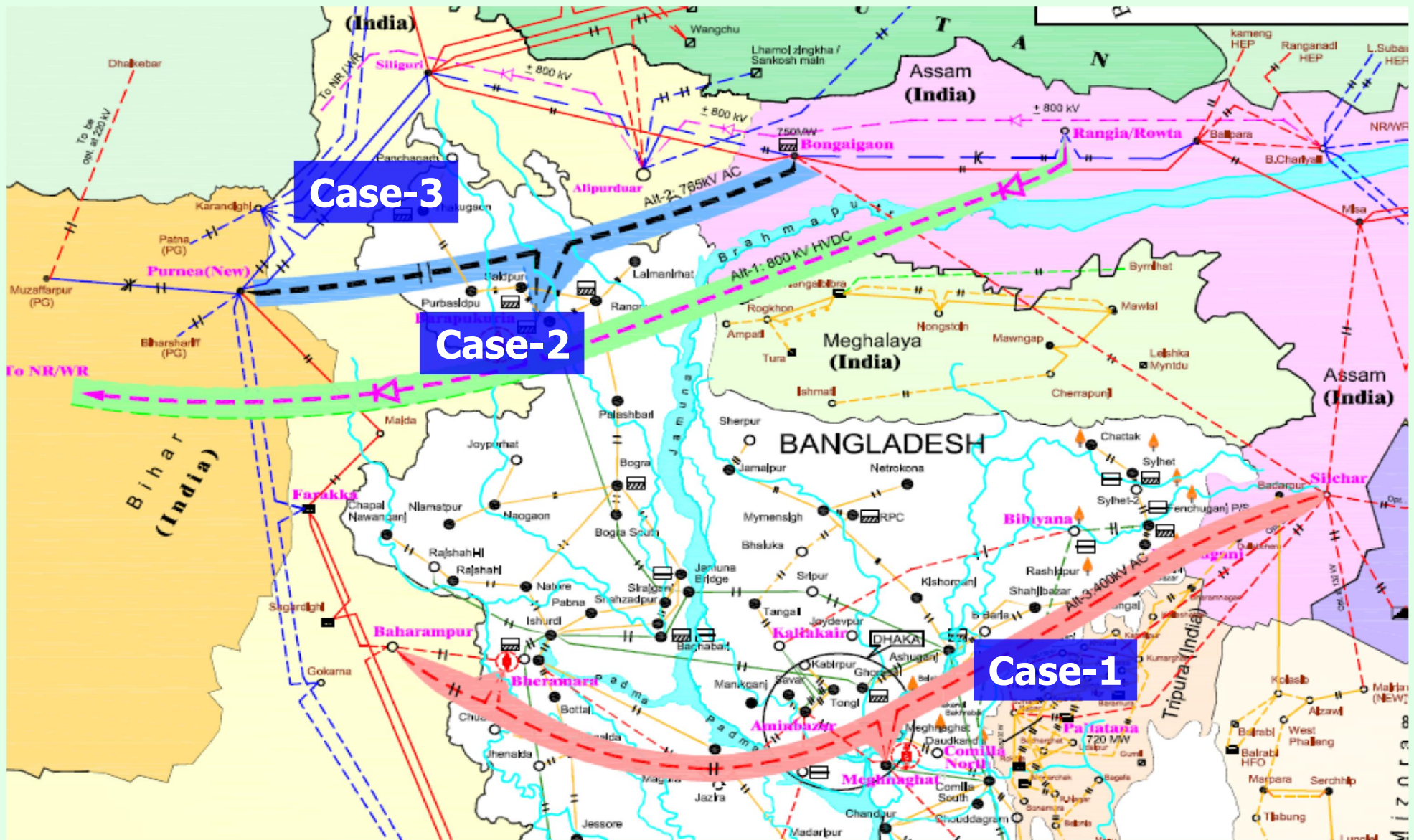
Present Power Trade Through 1st Inter-connector

- 250 MW Import from unallocated resource of Indian Government; NVVN is the nodal agency for power trade
- 250 MW power from Indian market through PTC for 3 yr short term contract
- 30 MW from IEX is under consideration

Payment Guarantee for Power Import

- PPA ensure fair and reasonable risk allocation, and payment by the purchaser (BPDB) is guaranteed by GOB
- Two component tariff - 'Capacity Price' and 'Energy Price' - ensures sufficient cash flow to recover investment and return
- Payment under the PPA is ensured by Letter of Credit

Possible Next Cross Border Interconnections



Power Import in Future

Future Power Trade

- Long Term Contract mainly with IPPs developing HEP in Arunachal, Nepal and Bhutan
- Short Term Contract from Indian Power Market
- Power Trade from 'Regional Power Market' in future where Bangladesh, India, Nepal, Bhutan, Sri Lanka and Pakistan will participate

Policy and Regulatory Issues

- National Energy Policy (NEP) envisages regional co-operation on electricity trade
- Cabinet decision on power import
- No major policy barrier for bilateral power trade
- Policy on transmission open access is in place but no regulation yet by the Bangladesh Energy Regulatory Commission (BERC)
- To participate in the regional power market, requirement of policy or regulation need to be examined
- Harmonization required in the policies and regulations regarding Governing Law, Arbitration etc

Challenges

- Availability of power at competitive price is a pre-condition for power market in South Asia
- Development of hydro resources in North-Eastern India, Nepal, Bhutan and Power Trade among neighboring countries will bring economic benefits to all the countries.
- Development of regional transmission inter-connection with adequate capacity is a major challenge
- Establishment of 'Regional Power Market' is utmost priority for maximizing benefits and ensuring energy security in South Asia

Thank you