



11th Meeting of SAREP Task Force-1



Coordination of Policies, Legal and Regulatory Frameworks for Cross Border Electricity Trade of Bangladesh

SK. Munir Ahmed

Director (Management), Power Cell, Power division

Government's Vision

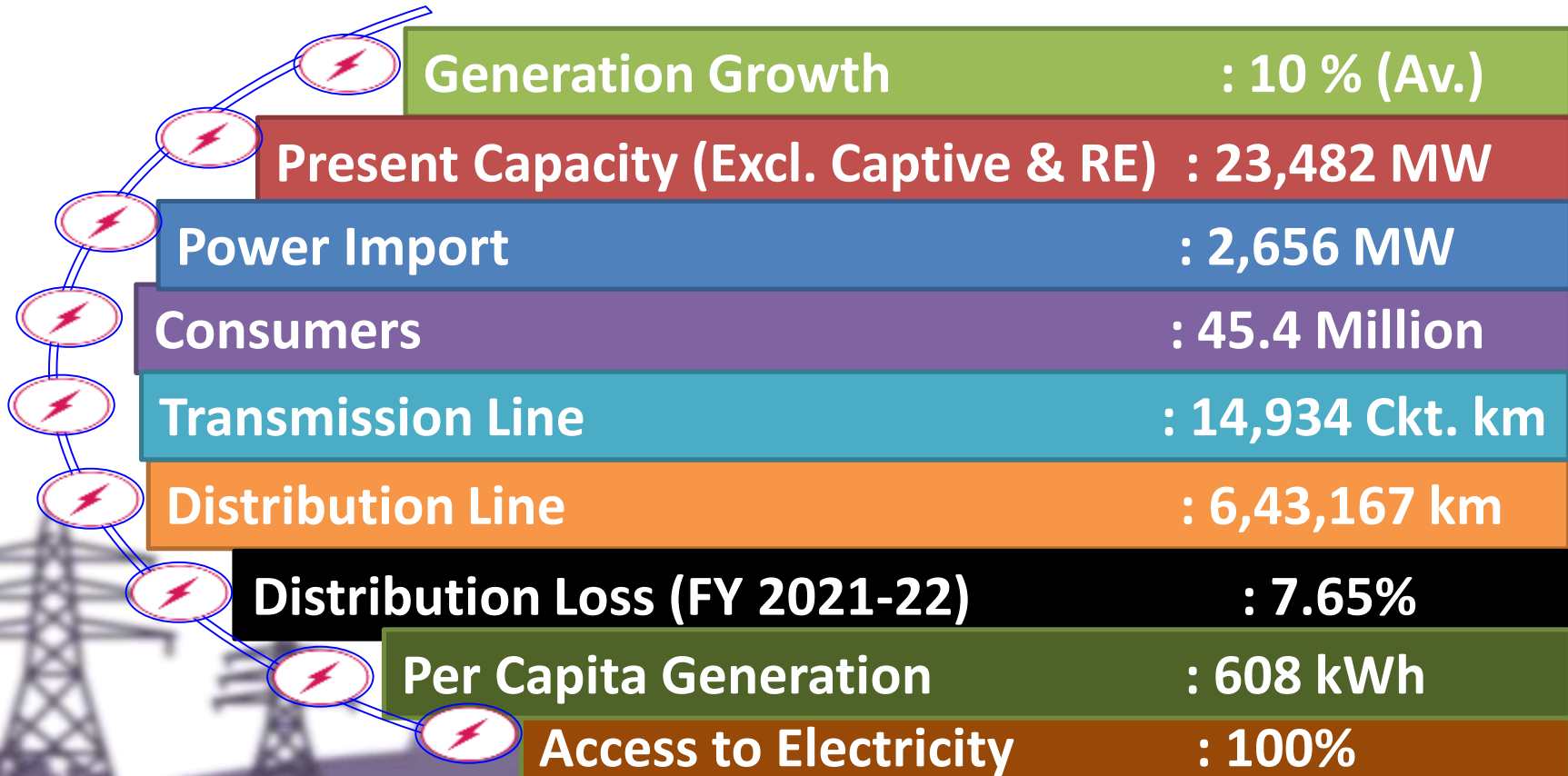


Bangladesh Power Sector Vision



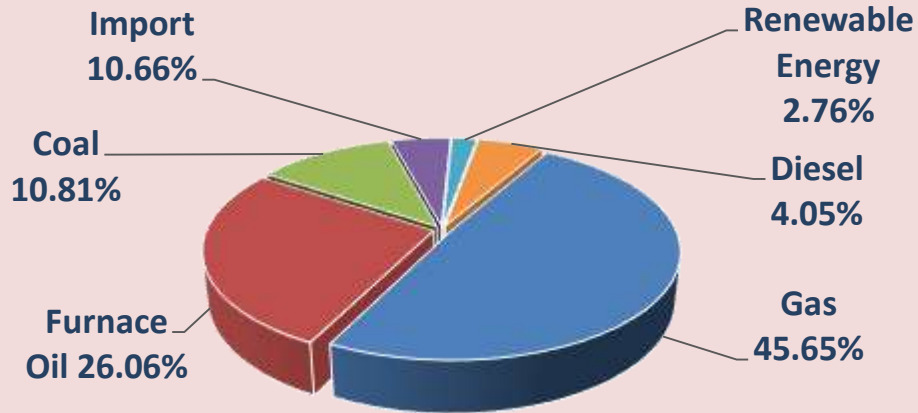
**Universal Access to Quality
Electricity at Affordable Price**

Power Sector: At a Glance



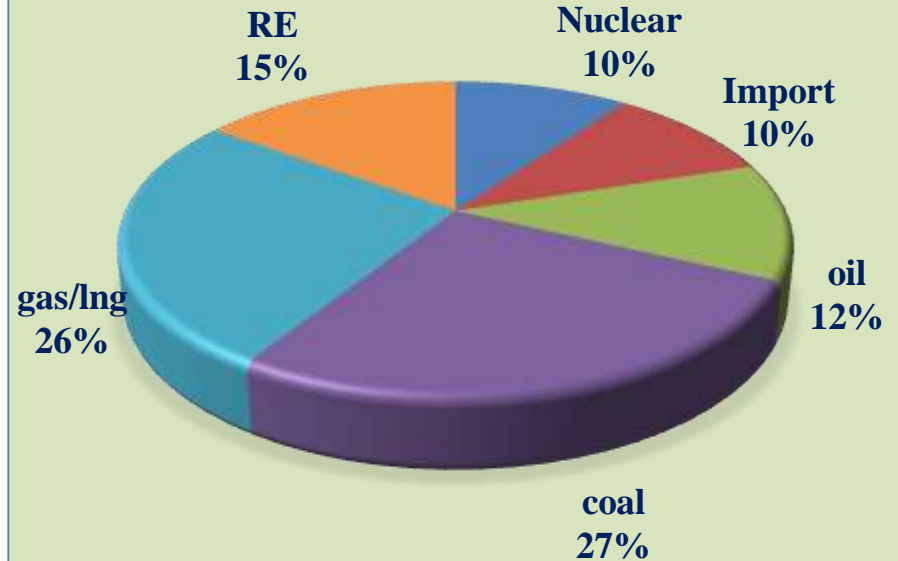
Fuel Mix: Generation Capacity (Grid)

24,911 MW



Present

40,000 MW

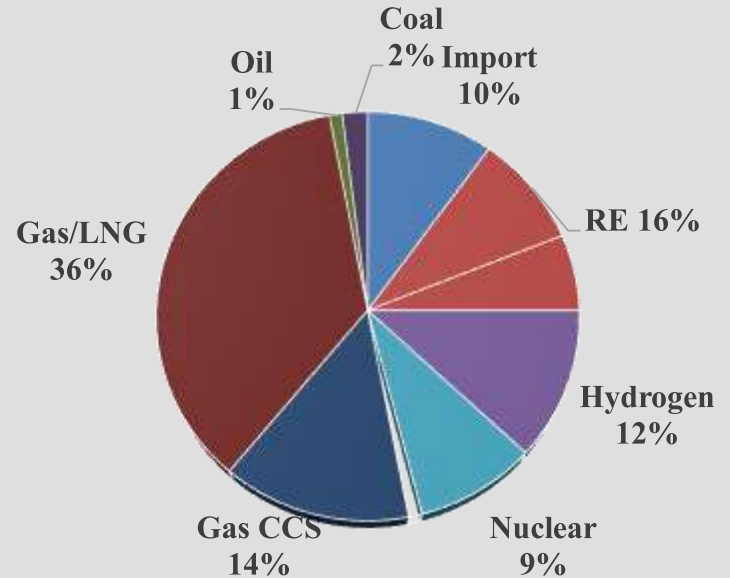
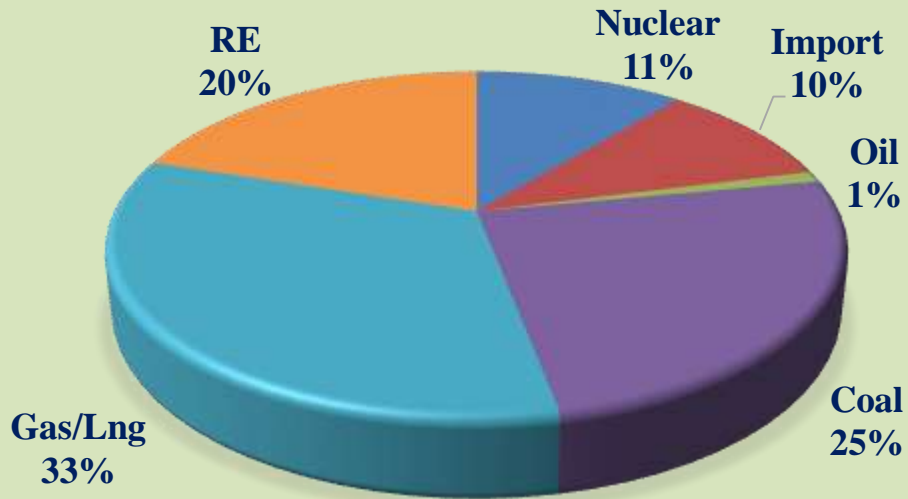


2030

Fuel Mix: Generation Capacity (Grid)

60,000 MW

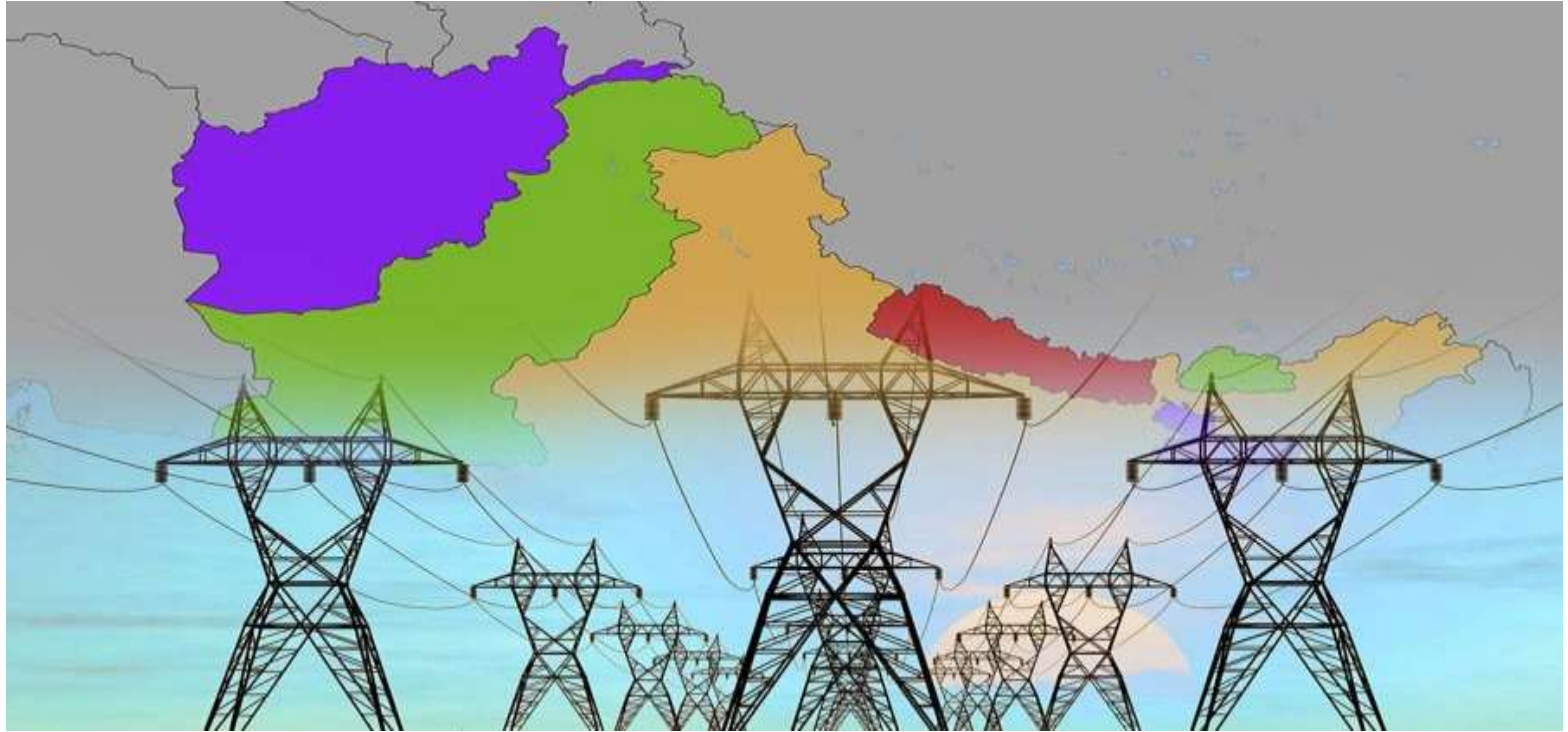
77,000 MW



2041

2050

Regional Cooperation



Regional Status

❖ **Target 9000 MW by 2041**

❖ **Power Import from India 2,656 MW**

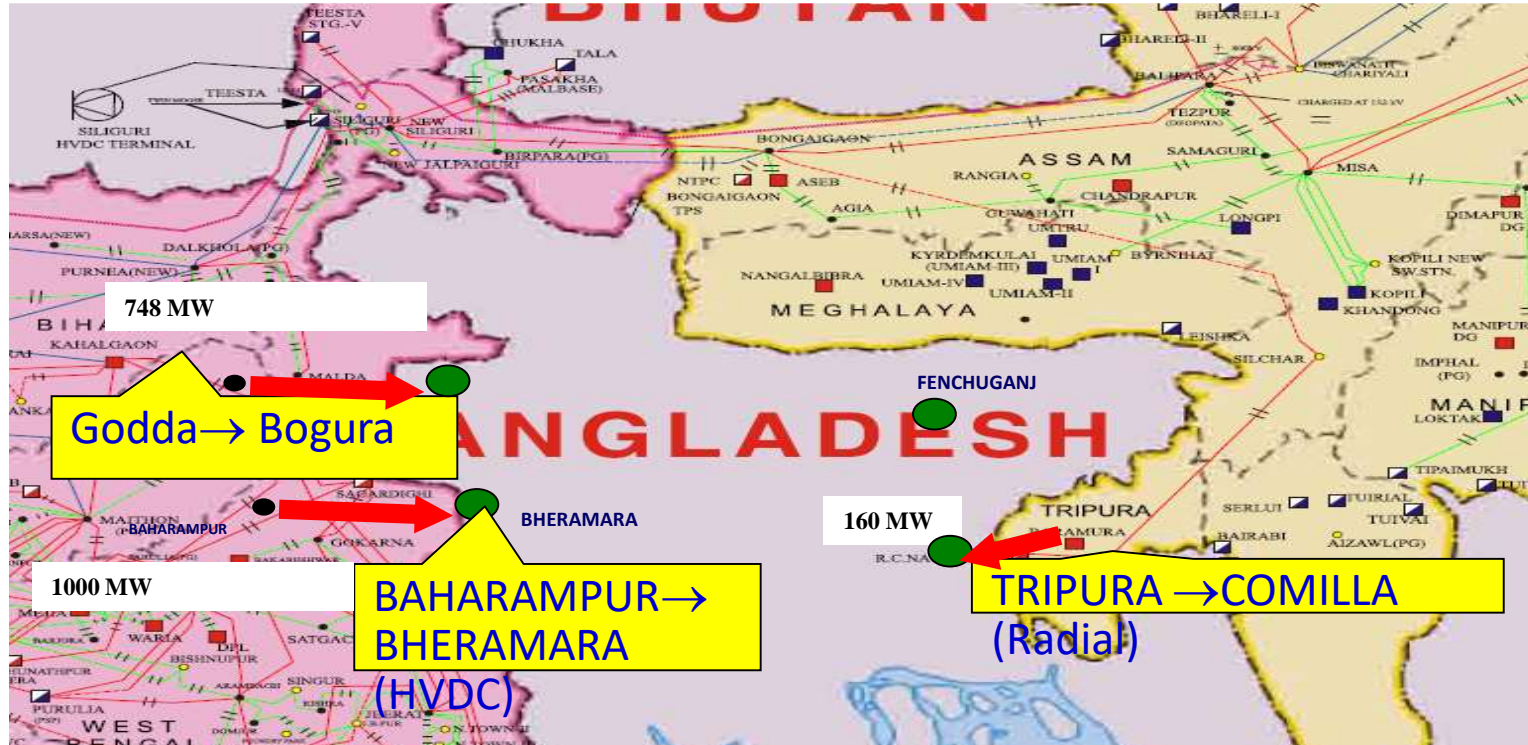
❖ **Collaboration with Nepal:**

- **Import 40 MW very soon**
- **500 MW from GMR Upper Karnali**
- **Joint investment in the Sankhuwasabha-3 hydropower project in Nepal**

❖ **Collaboration with Bhutan:**

- **Signing MoU very soon**
- **Joint Development of hydro power**

Existing Cross Border Inter Connection



CBET with Neighboring Countries

Short Term



Utilization of existing Bheramara-Baharampur link

Mid Term



Adding 3rd HVDC block

Long Term



Synchronous Interconnection



Dedicated Transmission link connecting Anarmani (Nepal) to Panchagarh/Thakurgaon (Bangladesh) over Indian territory



Transmission System Between Bangladesh & Nepal through Indian Grid



765 kV HV Transmission interconnection Katihar-Parbotipur-Bornagar



Integrated Energy & Power Master Plan (IEPMP) Recommendation on Power Import

**The total share
through CBET
10%-14% of
the total
generation
capacity**

**Import through
a single point
shall not exceed
10%**

**Export to the
neighboring
countries
taking
advantage of
seasonal
diversity**

Legal Instruments



Draft Policy on Cross Border Electricity Trade

BERC Act, 2003

The electricity Act, 2018

Draft Policy on Cross Border Electricity Trade: objectives

- ❖ Facilitate cross border trade of electricity between Bangladesh and neighboring countries;
- ❖ Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- ❖ Meet the demand of the participating countries by utilizing the available resources in the region;
- ❖ Establish a reliable grid operation system by harmonizing grid code among the countries for safe import and export of electricity;
- ❖ Building resilient transmission infrastructure for power evacuation by mutual cooperation of the countries;
- ❖ Facilitate investment opportunity for Bangladesh to develop hydro power plants with equity participation in Bhutan, Nepal and Northeastern region of India;
- ❖ Unlock regional power market opportunities through very professional and fellow feeling diplomatic cooperation.

Draft Policy on Cross Border Electricity Trade

Institutional Framework

Power Division, Ministry of Power, Energy and Mineral Resources, Government of the People's Republic of Bangladesh shall designate an Authority (Designated Authority) for facilitating the process of approval and laying down the procedure for cross border transaction and trade in electricity.

Electricity Import

- CBET shall be governed by the rules, regulations and policies of the Government and regulations of the BERC.
- BPDB, as a single buyer will continue to import power from neighboring countries until a market based system is established in the country.

For Export of Electricity

- Surplus power may be exported to the neighboring countries through single buyer.
- Generating companies may export surplus power to the neighboring countries.
- BERC may issue licenses for cross border electricity export.

Where Government policy is unclear on any matter concerning cross-border electricity trading, the Regulator will formally request policy guidance from the Government, and if no guidance is received than the Regulator will act in a manner that is consistent with the Regulator's powers and duties in national legislation.

Draft Policy on Cross Border Electricity Trade

Grid Interconnection

In future electricity may be imported and exported using electricity market through synchronous grid connection which will be more cost effective.

Tariff

The tariff for import/export of electricity shall be determined according to the mode of import/export e.g. market, long term contract, G to G contract, etc. This could be through competitive bidding, direct negotiation, day-ahead negotiation, etc. While the tariff is mutually agreed at Government level the same shall be considered as final.

System Operation

At present Bangladesh power market is single buyer concept. Independent System Operator (ISO) shall monitor the dispatching and scheduling of demand in case of market set model. ISO will impose provision for over drawn and under drawn of demand.

Draft Policy on Cross Border Electricity Trade

Generation Mix from CBET

Import of electricity from CBET shouldn't exceed 15% of the generation mix.

Grid Operation, Safety & Security

Grid security is paramount; therefore, cross border electricity trade would be under taken in a manner that does not jeopardize grid security at any point.

Cross-border Trade Agreements among Participating Countries

- ❑ Any cross border transactions between Bangladesh and country(ies) engaged in CBET shall be allowed through bilateral, tri-lateral or regional agreements between Bangladesh entity.
- ❑ The cross border trade of electricity transactions shall be governed by the policies of the respective countries
- ❑ Cross-border electricity trade agreements (PPA, STA & Other required documents)
- ❑ Review the impacts of the cross-border agreements on security of supply
- ❑ Import of electricity from generation projects located outside Bangladesh and owned or funded by Government of Bangladesh or by Bangladeshi Public Sector Units or by private companies ownership
- ❑ The cost of power purchases and transmission services from a cross-border transaction to be reflected in regulated tariffs

Draft Policy on Cross Border Electricity Trade

Transmission Access, Transmission Pricing & Ancillary Services

- ✓ It will oversee access to transmission for cross-border transactions to ensure that access is non-discriminatory to the greatest extent possible under the grid code.
- ✓ The Regulator will review transmission services agreements for cross-border transactions to confirm that prices for domestic transmission services
- ✓ The Regulator will review transmission prices to ensure that good signals are provided for transmission investment to the extent possible and that cross-subsidies between domestic and cross-border sales are minimized.
- ✓ The Regulator will use its powers to require that the procurement of ancillary services by system operators and control area services satisfies minimum requirements for national and regional ancillary and control area services.

Dispute Resolution

- ❖ The disputes within Bangladesh territory shall be settled as per the provisions of Bangladesh rules and regulation.
- ❖ The disputes involving entities of separate countries may be settled through Singapore International Arbitration Centre or as may be mutually agreed by the participating entities.

Legal aspects on Interconnection Infrastructure

Transit/Corridor Issue

SPV incorporation and registration in Bangladesh under
The Companies Act 1994

Licensing for power transmission infrastructure under Bangladesh
Energy Regulatory Commission Act 2003

The Acquisition And Requisition Of Immovable Property Act, 2017
(Land Acquisition Act)

Regulatory and Policy framework on Environment

Grid Code

Transmission Voltage Variation

- ❖ The Transmission System frequency shall normally be 50.0 Hz and shall normally be controlled in the range **49.5 – 50.5 Hz (50 Hz ± 1%)**.
- ❖ Voltage variation on the Transmission System shall normally be
 - ❑ **±5% for 400 kV,**
 - ❑ **±6% for 230 kV & 132 kV bus during *normal operations* and**
 - ❑ **±10 % at 400 kV, + 10/-15% for 230 kV, 132 kV bus during emergencies**

Grid Code

REQUIREMENTS FOR CONVENTIONAL GENERATORS

- The Generator shall ensure that each **Generating Unit** is capable of generating a full rated power output, within the frequency range of **49.5 to 50.5 Hz**.
- Any **decrease of power output** occurring in the frequency range of **49.5 to 47.5 Hz** shall not be more than the required proportionate value of the frequency decay.

Grid Code

Voltage Withstand Capability

- The Generator shall ensure that each Generating Unit is capable of supplying its full rated power output (both active and reactive) within voltage variations within the range **+/- 5% for 400 kV and +/- 6% for 230 kV, 132 kV** during **normal operating conditions**.
- Outside this range, and up to a voltage variation of **+/-10% for 400 kV and +10%/-15% for 230 kV, 132 kV**, a reduction on active and/ or Reactive Power is allowed, provided that this reduction does **not exceed 5% of the Generator's** declared data.

Grid Code

Frequency Withstand Capability

- Any variation of the system frequency within the range of **48.0 Hz to 51.5 Hz** shall not cause the disconnection of the Generating Unit.
- The Generating Units shall be capable to operate, for **at least 15 minutes**, in case of increase in frequency within the **range of 51.5 to 52 Hz**; and for **at least 30 minutes**, in case of a decrease in frequency within the range of **48.0 to 47.5 Hz**, in both cases provided the voltage at the Connection Point is within **+/- 10% for 400 kV and +10/-15% for 230 kV, 132 kV** of the nominal value.
- If the system frequency momentarily rises **above 52.0 Hz or falls below 47.5 Hz**, the Generation Unit shall remain in synchronism with the system for at **least five (5) seconds**. The System Operator may waive this requirement, if there are sufficient technical reasons to justify the waiver.

Opportunity



Seasonal Diversity

Fuel Diversity

Solar and wind potential in the region

Hydro potential from Nepal and Bhutan

Regional Electricity Market

Regional Cooperation Forums

- **Regional Engagement:**
 - Bangladesh actively participates in sub-regional, regional, and international cooperation forums. Notable forums *include SAARC, BBIN, BIMSTEC, SASEC, USAID-SARI, BADGE and UN-ESCAP.*
- **SAARC Collaboration:**
 - Ongoing collaborative efforts within SAARC (South Asian Association for Regional Cooperation) and with neighboring countries.
- **BIMSTEC Collaboration :**
 - Draft “BIMSTEC policy for transmission of electricity” and “BIMSTEC policy for Trade, Exchange of Electricity and Tariff Mechanism” prepared.
- **Tripartite Arrangements:**
 - Initiatives to establish Tripartite Arrangements between Bangladesh-India-Nepal and Bangladesh-India-Bhutan in the power sector.
- **Goal:**
 - The overarching goal is to enhance cooperation and strengthen regional ties for mutual advancement in the power sector.

Observations on CBT outcome



No regional power trading has been reflected commenced yet.

Only power import from India through different corridors have been demonstrated.

Dynamic stability analysis had not been performed based on combined network of Bangladesh and India.

There is no Optimal Power Flow (OPF) study conducted to identify feasible injection points (Technically & Financially) in Bangladesh Grid.

Dedicated transmission line between Bangladesh and Nepal is proposed

Observations on CBT outcome



Power import through different corridors has been considered as a typical generator connected to Bangladesh System.

Katihar-Bornagar 765 kV Line is under focus.

No clear indication of Synchronous or Asynchronous interconnection for Power Import. Requirements for each case need to be addressed

Technical, Regulatory, Economical & Environmental challenges not addressed for corridor lines.

Thank You