The Past, Present and Future of High voltage DC (HVDC) Power Transmission

Under Construction and Future plans

Bangladesh

Presented By:
1. Md. Shamim Hossain, Executive Engineer, HVDC Station, PGCB.
Bangladesh at a Glance

- **Official Name**: People’s Republic of Bangladesh
- **Political System**: Parliamentary Democracy
- **Area**: 148,460 km²
- **Population**: 159 million
- **Total Exports**: USD 30 billion
- **Total Imports**: USD 39 billion
- **Remittance**: USD 15 billion
- **Foreign Reserve**: USD 22 billion
- **GDP Per Capita**: USD 1,116
- **Power Capacity**: 11,088 MW
- **Per Capita Power Consumption**: 324 kwh
Bangladesh Grid Network

Grid Network Existing

2015

400kV Line: 165 ckt. Km
230kV Line: 3044 ckt. km
132kV Line: 6260 ckt. km

400/230kV SS: 01 (603 MVA)
230/132kV SS: 18(8775 MVA)
132/33kV SS: 111 (14543 MVA)
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 Conducted by: TEPCO, Japan

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
## Summary of Demand & Generation Forecast Master Plan-2010

<table>
<thead>
<tr>
<th></th>
<th>Demand forecast</th>
<th>Generation Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government Policy</td>
<td>Gen. Capacity Present</td>
</tr>
<tr>
<td></td>
<td>Considering GDP: 06%</td>
<td>Present Proposition</td>
</tr>
<tr>
<td></td>
<td>Considering GDP: 07%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>10 GW</td>
<td>18.2 GW</td>
</tr>
<tr>
<td>2020</td>
<td>18 GW</td>
<td>22.5 GW</td>
</tr>
<tr>
<td>2025</td>
<td>25 GW</td>
<td>29.3 GW</td>
</tr>
<tr>
<td>2030</td>
<td>33 GW</td>
<td>38.3 GW</td>
</tr>
</tbody>
</table>
Grid Network
Existing, Under Construction & Planned

2021

400kV Line: 3687 ckt. km
230kV Line: 5324 ckt. km
132kV Line: 10175 ckt. Km

400/230kV SS: 17 (14970 MVA)
230/132kV SS: 53 (38475 MVA)
132/33kV SS: 189 (33112 MVA)
Regional/Cross Boarder Link
Under Construction & Future Plan
## Regional Power Exchange/Trading Plan

<table>
<thead>
<tr>
<th>Name of Interconnection</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bheramara–Bahrampur</td>
<td>500</td>
<td>Ph-1: 500</td>
<td>Ph-1: 500</td>
<td>Ph-1: 500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ph-3: 1,000</td>
<td>Ph-3: 1,000</td>
<td>Ph-3: 1,000</td>
</tr>
<tr>
<td>Palatana/Silchar –</td>
<td>100</td>
<td>Ph-1: 100</td>
<td>Ph-1: 100</td>
<td>Ph-1: 100</td>
</tr>
<tr>
<td>Comilla</td>
<td></td>
<td>Ph-2: 400</td>
<td>Ph-2: 400</td>
<td>Ph-2: 400</td>
</tr>
<tr>
<td>Arunachal (Rowta) –</td>
<td>0</td>
<td>0</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Barapukuria</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nepal-Barapukuria</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,000</td>
</tr>
<tr>
<td>Alipurduar-Barapukuria</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1000</td>
</tr>
<tr>
<td>(Hydro Power from Bhutan)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meghalaya-Bibiyana</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,000</td>
</tr>
<tr>
<td>Total</td>
<td>600</td>
<td>1,500</td>
<td>3,500</td>
<td>6,500</td>
</tr>
</tbody>
</table>
Regional Power Exchange: Possibilities in PSMP
Potential Cross Border Interconnection Options

- Purnea-Barapukuria-Bongaigaon
- NR/WR/SR-Barapukuria-Rowta-Arunachal
- Bahrampur-Bheramara-Silchar
Purnea (India) - Barapukuria (BD) - Bongaigaon (India)
ER/WR/NR(India)- Barapukuria (BD)- Rowta / Arunachal (India)
Bahrampur (India) – Bheramara/Meghnaghat (BD) - Silchar (India)
Existing LC Converter-HVDC (BtB) Link

INTERCONNECTION BETWEEN INDIA AND BANGLADESH GRIDS

LEGEND
- THE PROJECT
- 400 kV
- 230 kV
- 132 kV
- Existing
- Under Constr. / Future
Under Construction Redial Connection
Palatana-Comilla
Challenges

- Lack of capacity charge provision in wheeling charge methodology.

- Fund arrangement to implement future development projects.

- Competency development to adopt advance technologies.
Thanks