BPDB Perspective

Digitalization of Electricity Utilities:

BPDB Perspective

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Deregulation of Bangladesh Power Sector

An Enterprise of BPDB

BPDB
P.O. 59 1972

Subsidiaries

PGCB 1996
APSCL 1996
EGCB 2004
NWPGCL 2006
WZPDCL 2002
NESCO 2016

UAEL
BCPCL 2014
SNPCL 2016
BCRECL 2014

Joint Venture

Residual DESA
DESCO 1997
DPDC 2008

B-R Power Gen, 2010
BIFPCL 2012
BBPCL 2018

Subsidiaries

2014
2016
2014

Energy Generation (Electricity) by Fuel Types

**FY 2010**

- **Gas**: 89%
- **F.Oil**: 3%
- **HSD**: 2%
- **Coal**: 4%
- **Hydro**: 2%

Total Generation: **29,247 MkWh**

**FY 2020**

- **Gas**: 71.8%
- **Coal**: 4.3%
- **Hydro**: 1.2%
- **Furnace Oil**: 13.3%
- **Renewable**: 0.09%
- **Import**: 9.3%

Total Generation: **71,419 MkWh**
Electricity Consumption

**FY 2009-10**

- DESCOD: 10.87%
- REB: 39.15%
- DPDC: 20.24%
- BPDB: 23.73%
- WZPDCL: 6.00%

Total Consumption: 24,596 MkWh

**Average Consumption Growth: 9%**

**FY 2019-20**

- DESCOD: 10.87%
- REB: 52%
- DPDC: 5%
- WZPDCL: 6%
- NESCO: 5%
- BPDB: 18%
- NESCO: 16%
- DESCOD: 8%

Total Consumption: 63,364 MkWh

Consumption Distribution:
- Domestic: 57%
- Industry: 28%
- Com: 10%
- Others: 3%
- Agriculture: 2%
2020 Typical Load Curve: Bangladesh

Source: Revisiting PSMP 2016
Electricity Consumption Demand In Bangladesh

- Residential
- Industry
- Commercial
- Irrigation
- Others

Electricity Consumption in Bangladesh from 2009 to 2041.
Electricity Consumption Demand Thailand and India

**THAILAND**

- **Industrial** 50% now decreasing 48% ,
- **Residential** consumption increasing  24% &
- **Commercial** 24%

**India**

- **Industrial** 41.48%, **Domestic** 24 %, **Commercial**  8.5  
  %, **Agricultural** 18 %
Why Do we need the Digitalization of Power System

Digitalization in the power sector

Data and analytics:
- Provide for predictive maintenance, planning and operational changes

Connectivity: Enables broad Structural Change

- Reduced O&M costs
- Improved efficiencies
- Reduced fuel consumption and costs
- Reduced CO₂ emissions
- Reduction of unplanned outages
- Improved system stability
- Extended asset lifetimes
- Reduced investment needs

Green: financial benefits for asset owner

Red: system benefit, consumer benefit

Blue: global environmental benefits

Digitalization in the power sector has the potential to bring benefits to the owners of power sector assets, the wider electricity system, consumers and the environment.

Source: IEA
Digital Transformation: Generation and Distribution System
• High efficiency (40 % SC, > 60 % CC)
• Fast start-up capability, high operational flexibility
• Low lifecycle costs
• High reliability and availability
• Reduced emissions per kWh
• High efficiency and low emission also in part-load operation

• Coal Based Sub critical to Ultra -Supercritical
Renewable based Power Generation

Existing Capacity: 130 MW

- Solar based
- Pipeline Project Capacity: 2500 MW
- Hydro Power Import Nepal: 500 MW By 2027
- Wind Based: Under Process
Potential Area: PSPP in Hill Tract

Remakri village, Thanchi sub-district, Bandarban district.
- Effective head 361m
- Discharge 161 m$^3$/s
- Probable Capacity 500 MW (Efficiency 88%)
- L/H: 4.0
- Effective Reservoir Volume m$^3$: 84,00,000

Thanchi village, Thanchi sub-district, Bandarban district.
- Effective head 329m
- Discharge 176 m$^3$/s
- Probable Capacity 500 MW (Efficiency 88%)
- L/H: 5.4
- Effective Reservoir Volume m$^3$: 45,00,000
Digital Transformation: Distribution Sector

- GIS substation
- Distribution System
- SCADA system
- Smart metering
- Underground cabling system
On-line Bill Collection through SMS, Banking

On-line Application
- Consumer new connection & Complaint management
- Recruitments

E-Tendering System

Computerized Billing and Customer Accounting System

Automated Meter Reading System (AMR)
Prepaid Meter system
To Ensure Proper use of Energy

ERP
- Human Resource Management
- Fixed Asset Module, Finance Module and Procurement Module

SCADA System in Distribution Network
- GIS (66,255 consumer data surveyed and entered into the system)
- 1,84,012 poles of 11KV and 33KV line surveyed,
- Distribution Analysis Software (ETAP already installed in server)

Under Ground Cabling:

E-Filing management System

online Project Review

Call Center
- for Customer Feedback/Complaints

Video Conferences/Meeting

Digitalization: Consumer Satisfaction
Digital Transformation: Distribution System

Existing Consumer | Prepaid meter Connected 4.0 million out of 40 Million in Power Sector

- BPDB installed 1.3 million prepaid meters out of its 3.3 Million customers

- 1.0 Million, Under Process, ADB Finance
- 30 Thousand Three Phase, 0.9 Million and 70 Thousand Single Phase
- 25 Sales and distributor division of Four Distribution Zones
Best Practice: T&D Loss Reduced Significantly

Comparison of T & D loss (FY 2010-20)

BPDB’s Distribution System Loss

Year

Loss In %

2010 15.73
2011 14.73
2012 14.61
2013 14.36
2014 14.13
2015 13.55
2016 13.10
2017 12.19
2018 11.87
2019 11.96
2020 11.23

Loss In %

2009 13.6
2010 13.1
2011 12.2
2012 12
2013 11.9
2014 11.2
2015 10.7
2016 10.9
2017 9.9
2018 9.1
2019 8.99
2020
Distribution Loss Comparison

FY 2020

BPDB: 8.99%
REB: 9.96%
DPDC: 6.67%
DESCO: 6.32%
WZPDCO: 8.27%
NESCO: 10.62%
Best Practice: Revenue, Collection & Bill Ratio:

<table>
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<th>Year</th>
<th>C.I Ratio (%)</th>
<th>C.B Ratio (%)</th>
<th>Accounts receivable (Million taka)</th>
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<tr>
<td>2014-15</td>
<td>85</td>
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Investment Opportunities

- Industrial Consumer
- Electric Vehicle
- GIS System
- SCADA System
- RE Development
- Grid based Solar and Wind Power project, **PSPP in Hill**
- Under Ground Distribution System
- Capacity Building
- Energy Efficiency & Conservation Measures
- Pre payment Metering, 440 V and 230 V consumer
- Automated Meter Reading: 11 KV and 33 KV consumer
- Ensure the optimal resource mix and power flow path
Thank You

Bangladesh Power Development Board