Past Brothers' Power Sector Has Similar Symptoms-A

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Bangladesh Roadmap

Capacity Payments

- Capacity charge is the payment made to the owners of power plants in return for the rights to utilise their power generation capacity.
- In the first PPA, independent power plants and rental power plants receive capacity payment of around $0.10 per kWh to $0.12 per kWh every month.
- Under the current agreements, the BPDB and CPPA-G is bound to pay the charge to the plant owners whether or not it uses their electricity.
    - As of June 2022, BPDB's total liability reached Tk1.35 lakh crore due to its chronic losses despite an electricity price hike of 160.46% since 2010

Expired PPAs

- At present, there are 95 quick rentals, rentals and IPPs out of the country's total 153 power plants. Most of these plants will have contracts expired in the next few years.
- To check the power purchase cost and reduce BPDB's financial loss, the government in 2019 decided to pay capacity charge only to those power plants which completed their contract period and want to extend their contract under "no electricity, no payment" model.
    - The model, however, made power producers entitled to a certain amount of capacity payment, though the amount is very nominal compared to the first PPA, said officials at BPDB.
- BD FM in budget for 2023-24 said, "The government will phase out the payment of minimum capacity charge by removing the clause of payment of minimum capacity charge at the time of contract renewal of existing rental power plants or rent-operated power plants."
    - "No electricity, no payment is a natural progression for a power sector and should encourage efficient utilisation of primary energy for power generation."
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        - There is simply no economic justification for their continuation due to the overcapacity of power.
    - Shutting down the loss making power plants to avoid further record setting losses is also crucially important.
        - More than one-third of Bangladesh power generation capacity is not being used creating stranded generation assets that are paid to sit idle. It is sound fiscal management to retire unutilized plants.
    - Plants in the existing contracts and fresh IPPs, however, will get the capacity charge when they sign the contract, added the officials.

New Construction

- It is much more sound fiscal management to retire unutilized plants, adopt a No Electricity No Payment policy and stop costly construction of new fossil fuel plants that are not needed.
    - This will allow electricity usage to catch up to capacity and more efficiently utilize existing assets.
- Immediately halt the construction of new fossil fuel power plants (including ones based on coal and LNG) and cancel all approvals of new LNG based power plants, which have not achieved financial closure.
    - Shift those resources to investments in renewable energy to come online much more quickly and meet any new generation demand that might be needed in 2027.
- If Bangladesh continues spending millions constructing new fossil fuel power plants that are not needed, it will drive power costs up even more and weigh down the Bangladesh economy.

Load Factor

- A target plant load factor should be established at minimum 70% before any new power plants are allowed to begin or continue construction.
    - Loans to build fossil fuel plants were based on 80% load factors.
    - Unutilized power generation with current plant load factors of only 41.88% provides no benefit to Bangladesh consumers, only increased costs.

Efficiency and Energy Pricing

- Implement rapid installation of RE Projects at both distributed and utility scale on unused lands at the power hubs.
  - To fulfil this target, significant allocation for RE should be made in the Annual Development Programme of the national budget.
- Increase Energy Efficiency at internationally accepted levels to supply cheaper and more reliable electricity consistent with recommendations in the 8th Five Year Plan, Perspective Plan 2041 and in the NDC 2021.
- Immediately implement massive T&D projects on an urgent basis to supply the generated electricity to the consumers so that the overcapacity could be reduced at a significant level.
- Endorse the Clean Air Act and impose Green Tax immediately to control emissions and penalize the power plants, which emit excessive CO2, SOx and NOx than permitted under the act.

Restructuring

- Reduce the staff of public power plants and decentralise BPDB through decommissioning power plants and regional distribution systems to newly formed public sector power generating and distribution companies.

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Pakistan

- SOEs Gross revenues reached Rs 11,922 billion, a 15% increase from the previous year.
  - Loss-making SOEs reported an aggregate loss of Rs 905 billion, up 23% from last year. Because some SOEs recorded a profit of Rs 703 billion, aggregate net losses are of Rs 202 billion, reflecting a 25% increase from the previous year.
  - Aggregate losses on power side total Rs 304 Billion despite the fact that Rs 759 Billion was spent supporting this sector
- 77 years later, electricity sector of Pakistan is still primarily state owned
  - Additionally, operational inefficiencies in the power sector continued to negatively impact profitability with spill over effects all across the chain.

- The consumer-end tariff comprises Energy Purchase Price (EPP), Capacity Purchase Price (CPP), the impact of T&D losses, Distribution & Supplier Margin, and Prior Year Adjustment.
  - In FY 2022, EPP constituted around 60% of the tariff, while CPP accounted for about 40%. The percentage of CPP in the overall tariff is on increasing trend.
  - During FY 2023, the percentage of EPP and CPP was around 50% each, while for FY 2024, it was projected to be around 67% and 33%, respectively.
  - The increase in CPP percentage is due to the augmented capacity of power generation plants and the addition of the HVDC line in the system.
  - Behind circular debt of Rs 5.4 trillion, is inability to recover charges or pass actual cost of generation and transmission and years of misgovernance.
- At present, fixed charges billed to electricity consumers range from approximately Rs. 200 to Rs. 500 per kW/month, determined by their Actual Maximum Demand (MDI) for the month or 50% of sanctioned load, whichever is higher.
  - In contrast, capacity charges billed to DISCOs by CPPA-G remain consistently over Rs. 4,000 per kW/month.
  - This highlights that only around 3% to 4% of the fixed costs is accounted for as fixed charges, while the rest is billed based on variable charges depending on energy consumption.
- The next major factor in cost increase is devaluation. At the close of
  - FY 2017,1 US$ was Rs 104.
  - 1 US$ to 157.66 Rs in 2021,
  - 1 US$ to 204.85 Rs in 2022
  - 1 US$ to Rs 287.50 in 2023
- Followed by lackluster economic growth of the country as GDP of Pakistan posted a growth of 0.29% in FY 2022-23 whereas our generation planning was based on over 5% GDP growth on peak summer demand
  - Gap between installed capacity and projected demand will continue due to changing growth indicators and RE induction is highlighted below, indicating the moving target and implication of execution cycle of 5-7years for thermal and 10+ years of nuclear

- Review of State of Industry Reports of 2017 2019 2023 also suggests that power planning focus be on 1+5years revolving cycle and 5+10years indicative for purposes of understanding long term implications.

Year ending 30th June	Installed Capacity (MW)	Planned Generation Capability as per NTDC	NTDC's Projected Demand Growth Rate (%)	NTDC's Projected Demand during Peak Hours (MW)	Surplus/ (Deficit) (MW)
2017	26,186A				
2018	33,096A				
2019	37,633 36,061A	28,357	4.4	26,348	2,009
2022	37,858A 45,195	27,748A 32,989	5.4	24,564A 30,921	3184A 2068
2023	54,556 48,915 40,628A	39,345 35,896 30,574A	4.3 3.3	31,095 31,953 23,679A	8,250 3,943 6895 A
2024	58,881 51,764	41,197 37,918 33,953	4.3 5.5 15.3	32,429 33,696 27,302	8,768 4,222 6,651
2027	60,758	40,433 41,865	5.6 4.9	38,227 32,753	2,206 9,112
2030	69,959	47,127	5.7	44,958	2,169

- Next major upcoming challenge will be manifested as we move towards higher RE capacity. While RE sources significantly contribute to clean electricity generation, they come with their own set of challenges that need to be addressed for their widespread integration into the grid.
  - The total installed capacity of renewable energy sources including hydropower, wind, solar, and bagasse/ biomass, in Pakistan's power system exceeds 13,000 MW.
  - Intelligent tackling of the issues related to variability, energy storage, and transmission infrastructure will be key to realizing the full potential of hydropower, wind, and solar energy in pursuit of a sustainable energy future.
  - Unlike conventional power plants that can provide a constant output, the availability of energy from hydropower, wind, and solar depends on weather conditions and water flow. This variability can lead to fluctuations in energy supply, making it challenging to match supply with demand in real-time.

        - As a result, grid operators need to implement sophisticated forecasting and balancing mechanisms to ensure a stable and reliable power supply.
    - Effective energy storage solutions are essential to capture and store surplus energy for later use, especially when demand is high and supply is low.
        - Developing cost-effective and efficient energy storage technologies is crucial for maximizing the benefits of intermittent power sources.
        - Unlike traditional power plants, intermittent sources cannot provide a continuous output, which means that excess energy generated during periods of high availability may go unused.
    - Building a robust, extensive transmission infrastructure to transport the energy from where it is generated to where it is needed and interconnected grid is crucial for efficiently harnessing the potential of intermittent power sources.
        - Geographical location of these sources can pose logistical challenges given the land requirement e.g solar power is most abundant in regions with ample sunlight, while wind energy is more prevalent in specific geographic locations.
    - To alleviate the impact of heightened capacity charges, it is crucial to boost the growth rate of electricity sales, implementing cost-reduction measures and delivering only electrons and not both electrons and molecules to residence.
        - Additionally, it is essential to retire generation capacity that has surpassed its initial licensed lifespan, along with low efficiency power plants of GENCOs and KE.
        - Furthermore, the decision in respect of induction of new generation capacity shall be made only after a through consideration of all relevant factors and comprehensive analysis of situation of economy, investment quantum and on basis of impact on consumer tariff.