Rating Criteria – Rating of Power Distribution Utilities

Executive Summary

Distribution plays a vital role in the power sector value chain, serving as the key interface between utilities and consumers, and acting as the revenue generator for the entire industry. According to the Indian Constitution, power is a concurrent subject, meaning that the responsibility for distributing and supplying electricity to both rural and urban consumers lie with the individual states.

The Government of India (GoI) supports states with various central sector and centrally sponsored schemes for the distribution sector. The Central Electricity Authority (CEA) projects that India's power demand will rise to 817 GW by 2030. As of October 31, 2024, India is the third-largest producer and consumer of electricity globally, with an installed power capacity of 454.45 GW.

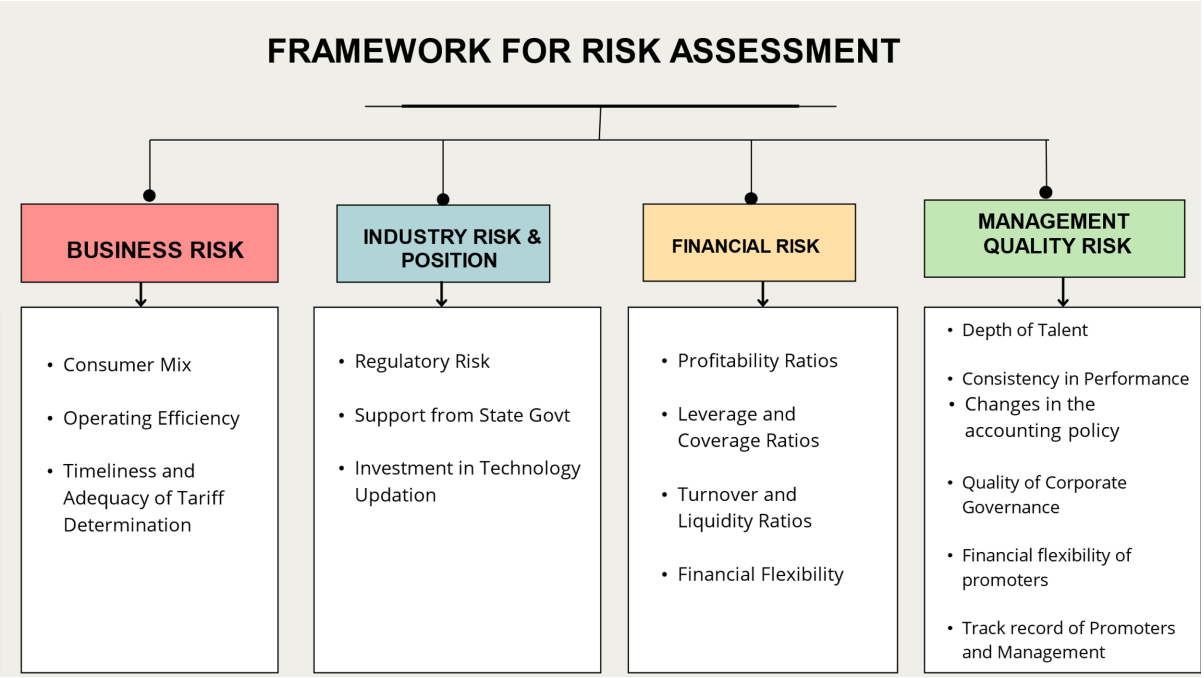
Power distribution is one of the most crucial and weakest links in the electricity supply chain. Power distribution companies supply power to a large retail consumer base within its service area and purchase the same from power transmission/generation companies. The power distribution segment is predominantly owned and operated by state entities, which cater to ~90% of the total energy demand, and private players in the urban cities of some states such as Gujarat, Maharashtra, Madhya Pradesh, Uttar Pradesh, West Bengal and Delhi own the rest. These entities are regulated by State Electricity Regulatory Commissions (SERCs) at the state level and Central Electricity Regulatory Commission (CERCs) at the national level. These regulatory entities determine the tariff for supply to consumers by the distribution companies. It assumes great significance as this segment has a direct impact on the sector's commercial viability and ultimately, on consumers who pay for power services. The sector has been plagued by high AT&C losses and distribution losses, coupled with electricity theft, low metering levels and the poor financial health of utilities with low-cost recovery. Due to this, distribution companies have not been able to undertake corresponding investments in infrastructure augmentation.

Scope of the Criteria

The document provides a brief analysis of the attributes considered by Brickwork Ratings (BWR) for rating distribution projects. The scope of this document is to capture key risks assessed by BWR while arriving at the rating of a Power Distribution Companies (Discoms). A brief summary of the effect of these attributes on the overall credit rating of discoms is highlighted, which helps ascertain the debt servicing capability as against the generation of cash flow and the ability of these Discoms to undertake large-scale power distribution networks.

In addition to the mentioned risks above, BWR also believes Environmental, Social and Corporate governance (ESG) risks and opportunities can increasingly have an impact on the operations and sustainability of business of an issuer. Hence, BWR while assessing the credit profile also assesses the ESG profile of the issuer based on data availability. It may be noted that the impact of the ESG profile of the issuer, both in terms of its strengths and weaknesses, is incorporated into the various management risk related parameters while assessing the credit risk associated with the issuer entity. Discoms are evaluated on their efforts to reduce environmental harm, including minimizing carbon emissions, managing waste, and ensuring efficient energy use. A key focus is the sustainable use of resources, avoiding environmental degradation by managing infrastructure, adopting renewable energy, and reducing the carbon footprint. Addressing these issues under ESG criteria helps mitigate risks related to climate change, regulations, and the demand for sustainable practices.

Risk Assessment and Rating Methodology



BWR factors in various quantitative and qualitative risks that distribution companies are exposed to, while assessing the risks in these companies. As highlighted above, the key risks that power distribution companies may face are business, industry, financial and management risks. BWR also considers Parent/Group/Government support criteria to arrive at final rating. These risks are considered to arrive at the rating of a distribution utility. The risks and how they are incorporated in the rating framework are discussed in detail below.

1. **Business Risk**

   Business risks for discoms involve factors impacting daily operations, margins, competition, efficiency, and profitability. Additionally, benchmarking against peers helps identify gaps, inefficiencies, and vulnerabilities by evaluating financial health, regulatory compliance, customer service, and technology. This approach supports proactive risk management, ensuring adaptability and long-term competitiveness in the power distribution sector. Business risk can be classified into three categories:

a) **Consumer mix and distribution network:** In a power distribution setup, the consumer mix typically includes residential, commercial, industrial, and agricultural sectors. Key risk factors for a distribution franchisee include the customer mix, purchasing power, service quality, and reliability. A higher proportion of High Tension (HT) customer increases vulnerability to competition, especially in a liberalized environment with open access for Captive Power Plants (CPP). A strong and growing industrial customer base is beneficial due to higher margins, though their concentration should remain balanced. A high proportion of agricultural consumers, often benefiting from subsidies or free power, can place financial strain on state subsidies, while also leading to lower collection efficiency and higher transmission losses from unmetered billing. The growing adoption of alternative energy sources like solar and wind can impact the consumer mix in the power distribution sector. As consumers increasingly seek sustainable and cost-effective energy, traditional power distributors may face greater competition. Assessing shifts in consumer preferences and their impact on demand and retention is essential for understanding the sustainability of the customer base and ensuring long-term viability in an evolving energy landscape.

   The distribution infrastructure and retail reach play a critical role in a licensee's market position, with incumbent licensees benefiting from outdated infrastructure in dense urban areas, which acts as a barrier to new entrants. Recent legislation allowing non-exclusive licensees to operate in the same area requires close monitoring of shifts between lower-paying and higher-paying customer segments.

b) **Operating efficiency:** This includes risks related to payment collection, transmission losses, metering, billing and collection efficiency, and minimising distribution losses, which is expected to have an impact on the cash flow of the distribution utility. This also covers the tariff structure as against the actual cost of power purchase. The ability of discoms to procure adequate power at minimum prices and supply power to their distribution network coverage area, while maintaining adequate collection will be the key operational risk to assess. The timeliness of subsidy payments and overdue government receivables is also looked into which might impact the cash flow and hence the credit risk. BWR assesses the following parameters while evaluating business risk:

- **AT & C Losses**: The AT&C (Aggregate Technical and Commercial) losses represent a combination of technical losses (due to factors such as resistance in conductors, energy dissipation, etc.) and commercial losses (due to theft, fraud, billing inefficiencies, etc.) in power distribution systems. The lower the AT&C losses, the better the operational performance and financial sustainability of the utility. Utilities must focus on improving both technical infrastructure and commercial systems to manage and reduce these losses, which in turn can improve their financial health, customer satisfaction, and compliance with regulatory standards. Hence BWR measures the percentage of energy lost in both technical and commercial aspects. A reduction in this percentage directly correlates with the improved efficiency of the distribution system.

- **Digital Payment Facility**: The Digital Payment Facility is a critical factor in enhancing the operating efficiency of power distribution utilities and minimising business risks. It improves cash flow, reduces operational costs, and lowers commercial losses, while enhancing customer satisfaction and engagement. However, utilities need to address the associated challenges, such as cybersecurity, technology infrastructure, and customer adoption, to fully realise the benefits of digital payments and ensure sustainable financial and operational growth. By integrating digital payment systems, utilities can not only improve their efficiency but also strengthen their business resilience in a highly competitive and regulated environment. Therefore, BWR assesses the digital payment amount while evaluating operational efficiency of an entity.

- **Cost Efficiency:** It involves optimising the use of resources to minimise operational expenses while maintaining or improving service delivery standards. Efficient cost management not only improves the utility's financial health but also helps in addressing regulatory pressures, consumer expectations, and competitive market conditions.

- **Consumer Metering**: Utilities can enhance billing precision, minimise both technical and commercial losses, boost customer satisfaction, and strengthen financial stability by implementing accurate, reliable, and automated metering systems, The transition to smart metering systems with remote monitoring capabilities, prepaid metering, and real-time data analytics significantly reduces operational costs, enhances revenue generation, and mitigates risks such as fraud, non-payment, and regulatory penalties. Effective metering systems not only increase operational efficiency but also serve as a tool to build trust and foster better relationships with consumers, ensuring long-term business success and stability.

- **Smart Metering**: It involves the use of advanced metering technologies, such as digital meters that enable two-way communication, real-time data collection, and remote monitoring. Smart metering improves the accuracy of consumption data, facilitates better demand management, and supports efficient energy distribution. They also help mitigate various business risks, such as revenue loss, regulatory penalties, and fraud. Moreover, smart metering systems integrate seamlessly with modern grid technologies, ensuring that utilities remain adaptable and efficient as they grow. Therefore, BWR considers smart metering is an important parameter to optimise operations, enhance customer relations, and maintain long-term financial stability.

- **Renewable Purchase Obligation (RPO)**: RPO is a regulatory mandate in many countries requiring electricity consumers, especially those in the power distribution sector, to purchase a certain

percentage of their energy from renewable sources. For a power distribution company, managing RPO requirements involves balancing compliance with renewables obligations and minimizing the impact on operational efficiency and business risk. BWR assesses RPO to improve operational efficiency by reducing business risks.

- **Billing Efficiency**: It refers to how effectively and accurately a discom can bill its customers for the electricity consumed, ensuring that all billing processes are streamlined, accurate, and timely. Poor billing efficiency can significantly increase operational costs, delay revenue collection, and amplify business risks. Therefore, BWR evaluates billing efficiency in power distribution companies to boost operational performance, minimize business risks, and uphold financial stability.

- **Transmission and Distribution Losses**: This represents the amount of electrical energy lost during the transmission and distribution of electricity from power generation plants to end consumers. Managing distribution losses is essential for improving the operational efficiency of a power distribution company and mitigating business risks. High distribution losses, whether technical or non-technical, result in lost revenue, increased operational costs, and regulatory penalties. By investing in technology, infrastructure, and preventive measures, discoms can reduce distribution losses, improve profitability, and ensure financial sustainability. BWR evaluates the extent of distribution losses to assess the business risks of an entity.

- **Collection Efficiency**: It highlights how efficiently a discom collects revenue from customers. High collection efficiency ensures quick payment conversion, stable cash flow, and financial stability, while low efficiency can cause delayed payments, rising arrears, and liquidity problems. By implementing strategies such as automated billing, customer segmentation, and incentivizing timely payments, power distribution companies can improve collection efficiency and ensure better financial sustainability.

- **Employee Cost to Total Cost**: It is a significant metric to assess the proportion of the total operational costs that are attributed to employee expenses. This metric helps in evaluating how labor costs contribute to the overall cost structure of the discoms. BWR evaluates the metric to enhance operational goals and improve long-term sustainability.

- **Employee Cost per Unit Input Energy**: The metric evaluates the labor cost associated with delivering electricity in relation to the energy input into the system. It reflects how effectively a discom utilizes its workforce in proportion to the total energy it manages and distributes. BWR analyses this parameter to understand the cost structure and overall financial health of a discom.

- **Demand-Supply Gap**: This criterion is crucial for assessing how effectively a discom balances the electricity it provides with consumer demand. An imbalance can result in operational inefficiencies, increased costs, and greater risks for the discom. BWR assesses the year-on-year improvement in the demand-supply balance to evaluate business risks.

- **Power Purchase Agreements (PPA):** It is a contract between discoms and power producers that defines terms for electricity supply, including pricing, payment, delivery schedules, and penalties for non-compliance. It typically features a fixed tariff, where the price stays constant, or a variable tariff, which fluctuates based on factors like fuel prices, inflation, or regulatory changes. In thermal power

plants, the unit cost may be tied to fuel prices like coal or natural gas, while in renewable projects, it depends on resources like sunlight or wind. Additional charges, such as transmission fees or performance incentives, may also be included. The pricing structure seeks to balance financial sustainability for generators and Discoms with affordability for consumers. Regulatory authorities ensure the unit cost is fair, avoiding excessive charges while ensuring reasonable returns for producers.The PPA includes clauses ensuring power quality and reliability to meet specified standards. It also guarantees a certain volume of power from the generator, ensuring a stable supply for Discoms. Additionally, force majeure clauses allow for renegotiation in case of unforeseen events like natural disasters or regulatory changes.

c) **Timeliness and adequacy of tariff determination:** This includes risks related to delays in tariff petition, political intervention in tariff petition and true-up claims. BWR assesses the track record of tariff determination by SERC for the distribution utility and adequacy of tariff as against the cost of power to the utility. BWR also assesses the delays in filing the tariff petition and approval by the SERC for the recovery of such claims. Delays in tariff determination or the non-implementation of the tariff order could impact on the overall credit quality of the distribution utility and impact on the cash flow of the utility. Discoms often face cash flow shortfalls due to delays in consumer payments, leading to difficulties in paying generators for energy. To address this, they rely on borrowings, government subsidies, and reduced expenditures. The Revamped Distribution Sector Scheme (RDSS) aims to improve operational efficiency and financial sustainability.

2. Industry and Regulatory Risk

a) **Regulatory risk:** This includes timeliness and transparency in tariff petition and accumulation and settlement framework for other regulatory assets and liabilities during the course of operations. Distribution utilities are regulated by the SERCs. The tariff revision is necessary for meeting additional costs due to an increase in generation and transmission costs, regulatory assets and legitimate expenses of discoms. Regulatory changes mandate that each licensee file annual revenue requirements and provides the option for separate tariff petitions if a revision is necessary. While most costs can be passed through with fair returns on equity, SERCs may impose stricter performance standards or disallow costs due to inefficiencies. In the end, SERCs strive to strike a balance between customer interests and the rightful claims of the distribution licensee.

If the data supporting a distribution licensee's tariff revision request is adequate or questionable, SERCs may deny the revision. The nature and scope of previous tariff orders issued by a SERC serve as a key indicator of its regulatory approach. Over the years, it has been observed that the tariff hike approved by the SERCs has been adequate compared to the cost of power across many states, which has resulted in continuous losses for the discoms. Furthermore, power distribution is politically sensitive in nature, implying many SERCs defer tariff hikes due to the political environment.

b) **Support from state government:** This includes subsidy support from the government and funding support in terms of debt takeover by the state. BWR analyses the credit quality of state- owned discoms, along with the credit profile of the state and the extent of funding support offered by the state government. Apart from funding support, state governments provide other support in the form of

capital support towards funding capital expenditure, subsidy support and political willingness towards regular tariff hikes and through the implementation of various reforms.

c) **Investment in updating technology:** This includes exposure to technological changes and advancement, its lifecycle. Investment in technology in the power industry plays a key role in mitigating risk. BWR assesses that technological investment in smart metering and grid connectivity, among others, reduces T&D losses and improves the billing efficiency of the discoms, which in turn generate greater cash flow and will be better placed to service their debt obligations, and generation and transmission charges.

3. Financial Risk

Since distribution is the most important link in the power sector, the financial health of discoms affects the viability of generation and transmission utilities as well. Therefore, the factors affecting the financial health of discoms are assessed critically by BWR.

a) **Profitability ratio:** This includes risks related to operating margin, growth in revenue and the Return on Capital Employed (RoCE). The ability of a discom to generate revenue from power distribution is an extremely important parameter to ascertain how much debt the company will be able to undertake. The main source of revenue for discoms is customer payments received against electricity supply. Due to failures in appropriate billing, meter reading, the collection of payments from customers and so on, the financial health and operating margins of discoms are severely affected. Discoms must therefore purchase cost- effective power from generation companies and ensure consistent electricity supply by avoiding outages, breakages and so on to ensure healthy and high operating margins.

Profitability Ratio	
Operating Margin	Operating Income / Revenue
Growth in Revenue	((Revenue in Current Period–Revenue in Previous Period) / (Revenue of Previous Period)) * 100
Return on Capital Employed (ROCE)	EBIT / Average Capital Employed

b) **Leverage and coverage Ratios:** This helps ascertain the level of debt held by discoms to gauge their ability to pay off their fixed interest obligations. BWR assesses a discom based on its current debt servicing ability as compared to cash flow generation, future cash flow, the past track record of it meeting its debt obligations, its current capital structure and the ability to recover its past dues or cost of power supply through tariff revisions. Further risks will be assessed based on the current approved tariff structure by the SERC, subsidy and funding support from state government, capital expenditure, working capital funding and funding options available with the Discom.

Debt to Equity Ratio	Total Debt / Total Equity
Gearing Ratio	Total Debt / (Tangible Net worth)
Total Debt to Gross Cash Accruals (GCA)	Total Debt / (PAT + Dep. - Dividend)
Interest Service Coverage Ratio (ISCR)	EBITDA / Interest & Finance Charges
Debt Service Coverage Ratio (DSCR)	(PAT + Dep. + Int.) / (Int. + Principal Repayment)
Cost Coverage Ratio	EBITDA / Cash Interest Expense
ACS - ARR Gap (Rs./ Unit)	Average Cost of Supply - Average Revenue Realized (Rs./ Unit)
Fixed Assets to Total Debt Ratio	Total Fixed Assets / Total Debt

c) **Turnover and liquidity ratio:** This includes risks related to payment to/from debtors/creditors and liquidity. BWR assesses the liquidity based on the past trends of collection efficiencies, cash balances with the Discom, utilisation of working capital limits and liquid investment to fund cash flow shortfalls, if any.

Receivables Days	(Trade Receivables * 365) / Net Sales
Payable Days	(Total Payable * 365) / Cost of Goods Sold
Current Ratio	Current Assets / Current Liabilities
Net Cash Accruals to Total Debt	(PAT + Dep. – Dividend) / Total Debt

4. Management Quality

A strong, dedicated and highly experienced board of directors helps the organisation achieve its profitability and operational efficiency targets and helps improve the company's financials. BWR assesses the consistency of the performance demonstrated by the management, and the quality of corporate governance adopted by the utility. Red flags, if any, highlighted by internal or external stakeholders, would negatively reflect in the rating. The financial flexibility of the management, funding and subsidy support from the state government, tested by the empirical evidence of successfully supporting the other companies/projects, past track record of debt servicing, and quality of corporate governance practices followed by the company are factored in while assessing the company's overall credit profile.

Conclusion

BWR analyses each of the above parameters after measuring the impact of each of the above- mentioned risks and attributes, along with financial projections over the life of the facility and the adequacy of cash flows to meet debt service obligations to arrive at the overall assessment of the credit quality of discoms. The major risks that a discom faces stem from distribution losses and a skewed tariff structure with high political intervention. In addition, risks related to billing, consumer metering and collection inefficiency are also taken into consideration to arrive at the final rating output.

The previous version of this document can be found in
https://www.brickworkratings.com/download/CriteriaPowerDistributionRatingMethodology_Jun2021.pdf

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