Rating Methodology – Thermal Power Producers

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Background

Based on the source of energy, power generation companies may be classified as thermal (coal, lignite, gas, or diesel), nuclear, hydro and renewable (solar, wind, biomass and waste-to-energy). The thermal power producers have continued to be an important constituent in the power generation scenario in India - both in terms of capacity as well as generation, despite the rapid growth in renewable capacity in the recent past. As per National Power Portal, the total installed capacity of electricity generation is 402.82 GW, with 236.1 GW (i.e., 58.6%) being contributed by thermal as of May 31, 2022. In terms of generation, the share is even more. The thermal generation in India was 1,114.7 BUs in FY22, which contributed to 84.39% of the energy supply. Capacity utilization of coal-based thermal plants has witnessed sizable improvement post the easing of the Covid-19 lockdown owing to a sharp increase in peak power demand and less-than-envisaged renewable generation.

Thermal power projects are capital intensive and leveraged in nature. CARE Ratings has developed a rating methodology for debt issues of thermal power projects. The rating procedure is designed to facilitate appropriate credit risk assessment, keeping in view the characteristics of the Indian thermal power sector. CARE Ratings' rating looks at a time horizon over the life of the debt instrument being rated and covers the following factors while rating thermal power projects.

1. Promoter group and management team
2. Project implementation risk
3. Project operations/ Business risks
4. Regulatory risk
5. Financial risk
6. Environment, Social, Governance (ESG) Risk

1. Promoter group and management team

The evaluation of the quality of management is an essential part of all rating assessments. CARE Ratings evaluates the management from different perspectives like financial capabilities, experience in the industry, track record in implementing and operating large projects and availability of technical manpower. Also, the commitment of the promoters/management to the business, strengths/weaknesses of other group entities and the group's plans on new projects, acquisitions, etc, demanding funding support from the operational power project being analysed is also critically examined.

For a detailed note on the evaluation of management risk: Refer to CARE Ratings' Rating Methodology-Infrastructure Sector Ratings (ISR) on our website www.careedge.in.

2. Project implementation risk

Project implementation risks assume significance in a power project due to the long gestation period and large investments involved in such projects. CARE Ratings analyses the following factors in this regard:

Availability of land and permitting risk

Land acquisition and project-related approvals are considered to be very critical for the timely implementation of thermal power projects as this activity usually takes maximum time in the entire implementation schedule of the power project. The thermal power project requires approvals from several government bodies including the Ministry of Environment and Forests & Climate Change (MoEF&CC), Ministry of Civil Aviation and State Pollution Control Board among others. The projects being developed under Case-I competitive bidding mechanism where land acquisition and all related approvals are to be obtained by the developer are relatively riskier as compared to the projects under the Case-II mechanism where the responsibility of arranging land and project clearances/ approvals rests with government nodal agency.

Within the thermal power sector, the land requirement for gas-based projects is relatively lower and gas being environment friendly, the related approvals are also obtained easily as compared to coal-based projects.

Considering the challenges in land acquisition and related approvals, CARE Ratings evaluates the issues related to land acquisition and various statutory clearances as any delay beyond the expected timelines could result in an escalation of both time and cost for the project.

Construction risk

The construction risk mainly involves analysis of the location of the project, credentials of engineering, procurement & construction (EPC) contractor and experience of the promoter in executing similar projects. Furthermore, the financial strength of EPC contractors coupled with a track record of execution of similar kind of projects in the past is also a key factor when evaluating the construction risk. CARE Ratings critically analyses the terms of the EPC contract to understand the obligations of the EPC contractor for timely completion of the project and liquidated damages (LD) clauses for any delay in completion of the project. CARE Ratings also evaluates the availability of the associated infrastructure required for the implementation of the thermal power plant which includes power evacuation line, water availability and railway siding for coal transportation among others.

Evacuation infrastructure

CARE Ratings analyses the availability of evacuation infrastructure and in the case of an under-development transmission line, the timelines for completion of the line vis-à-vis project's scheduled commercial operations date (SCOD) are looked into. Any delay in the construction of transmission infrastructure can cause the plant to remain idle despite becoming ready to generate power.

Financial closure

For timely completion of the project, financial closure is positively considered by CARE Ratings. Thermal power projects are capital intensive and are generally funded in a debt-equity ratio of 70:30 and therefore tend to have high leverage. CARE Ratings critically evaluates the status of infusion of promoter funds, the status of debt tie-up, pre-disbursement conditions and critical covenants of tied-up debt (viz, interest rate, moratorium period, repayment period, structuring of repayments, cash flow waterfall mechanism, TRA, subordination of promoter's contribution infused in other than equity form etc). The strong track record of the promoter in executing similar-sized projects and its financial strength are important risk mitigants, not

only in terms of timely execution but also in terms of arrangements of finances in cases of increase in project cost due to contingencies.

Credit assessment of the thermal power projects critically factors promoter group and the aforesaid project risks when it is at the project stage. However, once it becomes operational, weightage to the promoter group is relatively on the lower side as an infrastructure project is financed without any recourse to the promoter group. Accordingly, for an operational project, higher weightage is given to the quality of the asset as explained in the business risk parameters below.

3. Project operations/ Business Risks

Demand-supply risk

CARE Ratings evaluates the demand risk for the project by analysing the mix of long/medium/short-term PPAs tied up by the project. CARE Ratings also evaluates the projected demand-supply scenario considering the assumptions including likely capacity additions and drivers of demand growth.

Revenue Risk

A Power Purchase Agreement (PPA) is a crucial document outlining the rights and responsibilities of the power producer and evaluation of the same forms a critical part of the rating exercise. CARE Ratings looks at the tenor of the contract to assess the horizon of revenue visibility. The PPAs can be long-term, medium term and short-term in tenure. The long-term PPAs may be executed on the cost-plus basis or a competitively bid basis and carry low sales risk with pre-agreed pricing, thereby leading to lesser volatility in revenues. The long-term PPAs on a cost-plus basis covering the full loan tenor are viewed positively by CARE Ratings, followed by competitively bid PPAs on a long-term basis followed by the medium/short PPAs. The extent of revenue visibility by virtue of long-term arrangement is also seen. Non-availability of power purchase agreement tends to have an impact on the availability of linkage fuel as well. Medium-term PPAs may be executed with Discoms or Nodal agency/trading company having back-to-back selling arrangements with Discoms. Medium-term PPAs can be either competitively bid or based on mutually agreed tariffs for bulk industrial customers. These PPAs carry relatively higher risk as these generally do not cover the full loan tenor and the company's ability to timely renew the same at remunerative tariff is evaluated. Furthermore, the power projects may also sell power on short-term basis/power exchanges at spot tariff rates and remain exposed to vagaries of price fluctuation and quantum of power off-take and bears the highest sales risk. PPAs having escalation or indexation clauses may provide further comfort as against those not having such clauses.

The tariff rates are critically analysed to determine their adequacy to ensure the profitability and debt servicing capability of the power projects at the minimum performance level. In the case of plants with sizable, untied capacity, their track record of sales (in terms of volume and rate) in the merchant market along with their sustainability is also factored in the projection.

The revenue and profitability of a project are largely dependent on the nature of the PPA as well as the cost of the fuel. In the case of a cost-plus-based PPA, profitability depends upon the project's ability to declare the plant availability and maintain the actual costs within the normative benchmarks. In the case of a competitively bid-based PPA, actual returns for a company would depend on its ability to keep actual operating and cost parameters within the tariff bid levels. Thus, for a company with a cost-plus and competitively bid PPAs, CARE Ratings evaluates the extent of under-recovery (if any) in capacity charges

and energy charges. In the case of short-term PPAs, the company's profitability remains exposed to volatility in volume and tariff in the short-term market as well as the volatility in the fuel price level.

Fuel Supply Risk

The coal-based plants face challenges of mining output and logistic issues, while gas-based stations also face gas supply challenges which make fuel supply a significant risk for thermal power plants necessitating rigorous assessment of the same. CARE Ratings evaluates the adequacy of fuel supply to declare the capacity at normative levels. CARE Ratings also analyses the extent of tie-up of the fuel requirement through long-term arrangements, level of current despatch from the vendor, proximity of the plant to the mines, mode of transportation and its associated costs. The fuel cost pass-through risk is assessed by analysing the escalation in energy charge quoted in the PPAs. A plant having full fuel cost pass-through is perceived to be less risky than the one which has partial/no cost pass through. Also, the plants which have supply from captive mines tend to enjoy improved coal availability too at a competitive rate, leading to higher scheduling. Furthermore, in case the power project is using imported fuel without having forex variation as pass-through in PPA, foreign currency risks are also assessed.

The thermal power plants which do not have fuel supply agreements rely largely on auctions/imported fuel to meet their fuel needs. In such cases, fuel cost, as well as the distance from fuel (affecting fuel transportation costs), plays an important role in not only continuing to bid in auctions feasibly but also securing PPAs.

Apart from availability, quality of fuel is also assessed as lack of uniformity in the fuel mix may also impact the operational performance of the power project.

Plant efficiency and cost competitiveness

The power distribution companies (Discoms) are required to procure thermal power based on a merit order despatch, wherein the power plants with the highest variable costs are given least priority. In such a scenario, lower fuel costs ensure higher priority in merit order thereby contributing to higher actual generation. Though fixed costs might be recoverable based on plant availability, higher actual generation leads to higher contributions over and above the availability-based compensation.

CARE Ratings, in its analysis, considers the cost per unit generated for past years including fixed and variable costs. Furthermore, CARE Ratings also considers other operational metrics driving these costs such as auxiliary consumption, and station heat rate among others.

Thus, superlative operational performance of a typical thermal power plant is characterized by the maintenance of beyond normative plant availability, healthy plant load factor due to higher scheduling, lower than normative auxiliary power consumption and normative station heat rates.

Cost competitiveness is particularly important for plants with untied capacity. Pit head plants having high availability of coal at competitive rates along with nominal auxiliary power consumption and station heat rates tend to demonstrate better volume sales and realisation in the short-term power market, thus ensuring better profitability.

Off-taker risk

Quality of off-taker & diversification: Counterparty risk could significantly impact the credit quality of the project as there is a long-term tie-up of the project with the off-taker with minimal chances to move out of it. Accordingly, the off-taker plays a critical role in arriving at the rating for the project. Off-takers are broadly classified into three categories, viz., State distribution companies (Discoms), Nodal Agency/trading companies having back-to-back selling arrangements with Discoms and industrial consumers. For assessing the quality of the first category of off-taker, CARE Ratings relies on various parameters, viz, the past financial performance of off-taker, their credit rating, past payment track record, health of respective state government, movement in the level of AT&C losses over a period of time, trend of cost coverage & tariff revision, their past stance of honouring PPA commitments, etc. Also, various credit support mechanisms offered by an off-taker such as revolving letters of credit, escrow accounts, guarantees, and tri-partite agreement with the RBI aids the quality of the issue and its rating. In case of assessing the quality of nodal agency/trading company and industrial consumers, CARE Ratings relies on the business fundamentals of the entity, their credit rating, analysis of past performance, market standing, and expected performance of the industry in which the entity operates, etc. CARE Ratings considers a contractual sales agreement with multiple off-takers as a better proposition in general when compared to a single off-taker as it provides benefits of diversification.

Payment track record: Apart from analysing the fundamental credit quality of the off-taker, CARE Ratings also analyses the payment track record of the off-taker and attaches due weightage to the timely payment track record of the off-taker. For an operational project, CARE Ratings analyses the monthly billing & payment track record for a reasonable period (6 - 12 months on a case-to-case basis). Barring a few state Discoms, the majority of the state Discoms in India has a weak financial profile, and they demonstrate a delayed payment track record for varying periods of delays which typically constrain the rating for a project.

Force Majeure Risk

The impact of a force majeure event is usually higher for infrastructure projects including power projects given the single asset nature of the operations. This may be mitigated to a large extent through insurance or adequate provisions in contractual agreements. In case of an insurance claim, the extent of coverage, quantum of admissible claim and timely receipt of claim proceeds are evaluated.

Other Operational Risks

Operating risk covers the ability of the project to achieve the performance as envisaged. Following additional factors are considered in this regard:

- O&M arrangements with a reputed vendor
- Administrative efficiencies – employee costs, admin overheads etc.

4. Regulatory Risk

The power sector in India is governed by regulators both at the central and state levels including Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs). The power projects involved in the sale of power in more than one state are required to adhere to CERC guidelines, while other projects are required to follow the SERC guidelines.

SERCs work broadly as guided by CERC and are responsible for framing guidelines for state generation, transmission and distribution utilities as well as determining tariffs as payable by state Discoms.

In the assessment of regulatory risks, CARE Ratings analyses the timeliness and adequacy of tariff determination/revision applicable for regulator-determined tariff PPAs. Any delay in such determination/ revision could be a credit concern and may have caused because of delay in petition filing by the power producer or delays in the issuance of an order by the regulator. Furthermore, the regulatory orders by CERC/SERC are critically analysed even for competitively bid PPAs with respect to various regulations such as changes in law, domestic fuel shortages, tariff compensation, etc. CARE Ratings not only assesses the approval for tariff change but also the timeliness in the realisation of the regulatory receivables.

5. Financial risk

Future cash flows

CARE Ratings carries out an analysis of the projected operations of a project to get insights into the power project's ability to service debt. The analysis would involve a critical examination of the underlying assumptions, location of possible stress points and the extent of flexibility available to tide over difficulties. CARE Ratings evaluates the strength of key assumptions and trends in the projected free cash flow to arrive at a base case cover against the scheduled debt payment. CARE Ratings also sensitizes the projected free cash flow through stress scenarios to assess the extent of buffer available for debt coverage. Any refinance risk is analysed in relation to the overall debt profile and the future earning capacity of the asset at the time of refinancing.

Leverage

Generally, thermal power projects are financed at a debt-equity ratio of 70:30. For an operational project, the capital structure of the company would depend more on the depreciation policy adopted by it apart from its revenue generation potential. Accordingly, the capital structure of the company is seen in consonance with its depreciation policy. Furthermore, CARE Ratings also looks at the Total debt / PBILDT to nullify the effect of depreciation on leverage indicators.

CARE Ratings also evaluates the quantum of capital creditors pending for settlement for a long time, any large contingent liabilities and disputes and the financial impact in case of any unfavourable event triggering the payments.

Debt Service Coverage Ratio (DSCR)

CARE Ratings considers DSCR as one of the important ratios to assess the relative debt servicing capability of the project as it largely captures all the critical aspects of the project. CARE Ratings analyses average DSCR for the tenure of the debt, minimum DSCR during the tenure of the debt and DSCR during the next three to five years while analysing the debt repaying capability of the developer. CARE Ratings also sensitizes the base case DSCR for the key variables of projects like PAF, PLF, tariff rates, fuel cost, finance cost, payment delay from off-taker etc.

Liquidity back-ups

As power from thermal projects is supplied to state Discoms, there exists a risk of delayed payment from counterparty. CARE Ratings considers adequate liquidity backup as an important rating consideration as debt repayments are normally evenly spread out (monthly/quarterly basis). The higher the delay by the counterparty, the greater the liquidity buffer the developer needs to maintain to curtail the off-taker payment risk. For a thermal power project, liquidity back-ups are created primarily in the form of DSRA which covers 1-2 quarters of debt repayment obligations in the form of FD / bank guarantee and working

capital limits. Also, the stipulation and compliance of maintenance of designated accounts (viz., escrow accounts, TRA for maintaining priority in payment, etc.) being seen positively in credit analysis. CARE Ratings assesses the overall liquidity profile of the company based on its methodology on "Liquidity Analysis of Non-Financial Sector Entities" on our website www.careedge.in.

For evaluating detailed credit metrics, CARE Ratings follows its standard ratio analysis methodology to assess the financial risk of companies (Please refer to CARE Ratings' Financial ratios – Non-Financial Sector on our website www.careedge.in).

CARE Ratings analyses each of the above factors and their linkages to arrive at the overall assessment of credit quality. Peer comparisons are carried out as an integral part of the financial analysis. Mitigation of credit risk due to any credit enhancement provided is carefully evaluated before assigning the final rating.

6. Environment, Social, Governance (ESG) Risks

Environmental and Social (E&S) risks tend to be high for thermal plants, especially during construction, due to the potential hazard of pollution and damage caused to the environment. Accordingly, flexibility in financing thermal power plants tends to get limited due to increasing Environmental, Social and Governance (ESG) awareness and compliances.

The ability to manage social risk through the smooth settlement of discord with locals during land acquisition is factored in the analysis. CARE Ratings also assesses the composition of the board of the thermal power company, the level of compliance with various policies, the quality of financial reporting and the adequacy in disclosure from the perspective of corporate governance.

Based on the location and proximity to cities, the thermal plants have been notified timeline by MoEF&CC to install Flue Gas De-sulphurisation (FGD). Given the significant environmental risk posed by an operating thermal plant, initiatives with respect to FGD implementation by the company can be an indicator of its risk mitigation. In this regard, CARE Ratings assesses the implementation risk and risk associated with FGD capex recovery through future tariffs. The cost of the project, its rationality, means of finance and status of financial closure are factored in the analysis. In-principal approval of cost by the regulator provides some visibility (even though partial) with respect to recovery of cost and thus adds comfort to an extent. CARE Ratings assesses the physical and financial progress of the capex as well as the implementation schedule. The presence of an experienced project management consultant and EPC contractor provides comfort to the ratings.

Conclusion

The rating outcome is ultimately an assessment of the fundamentals and the probabilities of change in the fundamentals. CARE Ratings' Ratings analyses each of the above factors and their linkages to arrive at the overall assessment of credit quality, by considering the industry scenario. While the methodology encompasses comprehensive financial, commercial, economic and management analysis, credit rating is an overall assessment of all aspects of the issuer.

[For the previous version please refer to 'Rating Methodology – Thermal Power Producers' issued in July 2020**]**

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About:

CareEdge (earlier known as CARE Group) is a knowledge-based analytical group that aims to provide superior insights based on technology, data analytics capability and detailed research methods. CareEdge Ratings is one of the leading credit rating agencies in India. It has an impressive track record of rating companies for almost three decades and has played a pivotal role in developing the corporate debt market in India. CareEdge provides near real time research on all domestic and global economic developments. The wholly owned subsidiaries include CareEdge Advisory & Research arm focused on providing advisory and consultancy services and CareEdge Risk solutions a platform that provides risk management solutions