Rating Methodology: Solar Power Projects

(Issued in October 2022)

Background

India has an installed renewable capacity of around 110 GW as on March 31, 2022, comprising solar power of 54 GW, wind power of 40 GW, small hydro of 5 GW, and other sources including biomass of 11 GW. There has been significant traction in solar power installations over the past few years and the cumulative solar power capacity has surpassed the installed wind power capacity, despite its late and slow start. The overall renewable energy (RE) installations have increased at a CAGR of 17% from FY16-FY22. Over the years, the RE industry has benefitted on account of the government's strong policy support, India's largely untapped potential, the presence of creditworthy central nodal agencies as intermediary procurers, and the improvement in tariff competitiveness. Going forward, with India setting up targets to achieve 50% of the cumulative installed capacity from non-fossil-fuel-based energy resources, the regulatory framework is expected to remain supportive.

This criteria document covers the risks faced by players operating in the solar industry and CARE Ratings Limited's (CARE Ratings') approach for evaluating the credit profile of these players. This note updates and supersedes CARE Ratings' earlier methodology on the sector published in August 2020.

Rating methodology

Infrastructure assets are usually developed through special purpose vehicles (SPVs), wherein, the cash flows are ring-fenced, and the debt is also non-recourse in nature. These assets have a long useful life and CARE Ratings factors in the same for its analysis. While rating an under-construction or an operational SPV, CARE Ratings assesses the project on four broad parameters, which include examining the following:

- Business risk
- Industry risk
- Financial risk
- Management and parentage

Kindly refer to CARE Rating's methodology on the overall infrastructure sector on our website www.careedge.in.

Business risk

Some of the major factors that determine the business risk of an entity have been mentioned below. The list of factors mentioned is not exhaustive as there can be additional considerations impacting the credit profile of an asset. However, in CARE Ratings' opinion, the following are the major determinants of the credit profile. The first few risks are primarily applicable when a project is in the development stage.

- **Permitting risk**

  Permitting risk for a solar plant can be further subdivided into three segments, viz, approvals for land, transmission connectivity, and statutory clearances. Land acquisition is among the first steps for setting up a solar asset and a power purchase agreement (PPA) generally mandates six months for a developer to secure the parcel of land. Moreover, the quantum of land required for a ground-mounted solar project is between 4-5 acre per megawatt (MW), making the overall land requirement significant. The solar power developer generally needs to ensure the evacuation of power from its plant to the nearest grid substation, that approvals regarding long-term or medium-term open access for the plant are in place, and that statutory clearances from the respective ministries and nodal agencies are in place. In CARE Ratings' opinion, permitting risks are significantly lower for a plant located in a solar park, as issues pertaining to land acquisition, connectivity, water, etc, are taken care of by the solar park implementation agency; however, the one-time development fee plus annual charges paid to the implementation agency are generally higher than those incurred for a standalone asset.

- **Construction risk**
  Construction risk refers to challenges faced by a developer to commission a plant. A delay in project implementation can lead to time and cost overruns, thereby impacting project returns. Moreover, the terms of a PPA with a counterparty generally include the liquidated damages payable by the developer in case of any delay in commissioning. It can be either through the imposition of penalties, encashment of performance bank guarantees, reduction in applicable tariffs, or a combination of these. While evaluating the construction risk, CARE Ratings assesses the progress in terms of construction, evaluates the underlying engineering, procurement, and construction (EPC) or equipment contracts, and the original equipment manufacturer (OEM) for critical components such as modules and inverters (reference is taken from Tier-1 module manufacturers), the extent of penalties and liquidated damages covered in various contracts, along with the track record of the sponsor and the associated contractors in carrying similar projects. Furthermore, the techno-economic viability is also factored in while assessing a project.

- **Funding risk**
  As infrastructure projects are capital-intensive in nature, they require the mobilisation of a large amount of capital, which is primarily sourced as either debt or through the sponsors' contribution (plain vanilla equity, quasi-equity, and other hybrid instruments). Therefore, CARE Ratings factors in the prevailing or envisaged funding tie-ups, the timelines of achieving financial closure, the terms of various instruments, as well as the composition of the capital structure. Government PPAs generally stipulate timelines for a greenfield project by which the company has to achieve financial closure.

- **Nature and terms of PPA**
  PPA is a legal contract that provides revenue visibility and alleviates the demand risk for a project. While analysing a project, CARE Ratings examines the PPA tie-up status and its underlying provisions, such as:
  - Tenure
  - Tariff
  - Take or pay obligation
  - Deemed generation
  - PLF floor and cap
  - Billing and payment timelines
  - Payment security mechanism
  - Compensation clauses for grid unavailability and grid curtailment
  - Events of default
  - Termination payments, among others.

  The presence of a long-term PPA at a fixed tariff rate is viewed favourably, as it mitigates the risks associated with both, demand and pricing. In the Indian context, within the various revenue models, the PPAs with central counterparties are viewed more favourably as compared to the PPAs with state distribution utilities and commercial and industrial (C&I) customers, due to factors such as adequate payment security mechanism, strong credit profiles of the off-takers, availability of tripartite agreement (between the RBI, states, and benefitting central PSUs), etc. Furthermore, the PPAs have enabling clauses for compensation in case of grid curtailments and termination payments, and in the case of buyer event of default, are viewed favourably.

- **Tariff competitiveness**
  CARE Ratings assesses the tariff competitiveness of the solar energy tariff in PPA concerning the average power purchase cost as well as the marginal variable cost of power purchase for the off-taker utility. For projects having PPAs with third-party consumers or for captive consumption, CARE Ratings assesses tariff competitiveness vis-à-vis the applicable grid tariffs in addition to the regulatory environment related to the eligibility criterion for group captive projects, adequacy of the banking and wheeling arrangements, and other open access charges.

- **Counterparty credit risk**
  Counterparties in the Indian context primarily comprise central off-takers, state discoms (state distribution utilities), and private C&I players. In assessing the counterparty credit risk, CARE Ratings evaluates the financial position of the counterparty, its credit profile, the track record of payments, and the strength of the payment security mechanism (PSM), which generally comprises one-month letters of credit (LCs).

- **Operating and climatic risks**
  As tariffs in most of the renewable energy projects is one-part in nature, the SPV may book lesser revenues in the event of non-generation of power due to variation in weather conditions and/or equipment quality. This, in turn, will affect its cash flows and debt servicing ability. For estimation of the expected power generation of a site, CARE Ratings relies on the report of an external agency hired by the project company for conducting a resource assessment study. The agency conducting the resource assessment study normally provides power generation estimates for the given site at three probability of confidence levels, viz, P-50, P-75, and P-90, whereby, the P-90 level is considered to be the most likely estimate. Furthermore, the annual degradation is presumed in line with the industry standards.

  For completed projects, CARE Ratings takes the actual generation vis-à-vis the projected generation to gauge the deviations (if any) and the same is built into the projections as well. CARE Ratings considers the P-90 level of power generation for its base-case analysis of a project. Furthermore, plant availability and grid availability are assessed in relation to their respective normative parameters. In case there are weak operation and management (O&M) practices, or the credit profile of the O&M vendor is weak, the impact is generally reflected in the plant availability and the generation performance. Moreover, the quality of the equipment used also determines the generation profile of the plant. Asset diversification is also factored in case projects in an SPV are spread across multiple locations. This acts as a mitigant against the resource variability risk to some extent.

Industry and regulatory risk

Projects in the renewable energy sector are exposed to systematic risks prevalent in the industry as a whole. Prominent risks are instances of delayed adoption of tariff terms, determination of tariff, imposing additional charges in a retrospective manner, etc. Moreover, despite PPAs being contractual arrangements, there have been multiple attempts to re-negotiate PPA terms, resulting in prolonged uncertainty, which has also impacted the collection profile of developers. CARE Ratings monitors these industry-related developments on a regular basis and the same is factored in the credit assessment. Regulatory risks also include changes in tax structure or other charges, which does become a change in law event for the developers. However, obtaining a revised cost approval involves legal and regulatory proceedings, which often delay the receipt of requisite compensation.

Financial risk

- **Stability and adequacy of cash flows**

  Since the creditworthiness of a project is primarily determined by the adequacy of cash flows from the project vis-à-vis the debt service obligations, CARE Ratings draws projections for the life of the asset. Additionally, the past financials of the company are factored in, as they indicate the historical composition of the cost structure, revenue profile, balance sheet composition, etc. The cash flows are drawn considering the applicable tariff, the expected plant load factor (PLF), and the envisaged cost metrics including the interest cost to determine the company's future debt servicing capability. Furthermore, the cash flows are sensitised to the key variables of the project like PLF, tariff rates, finance cost, payment delay from off-taker, etc, to gauge the degree of cushion available in a particular project.

  For an operational project having a track record of more than three years, CARE Ratings takes the simple average of the generation assets for its projections. For PPAs wherein the tenor is lower than the debt tenor, the tariff, post the PPA tenor, is assumed close to the prevailing bid tariffs. Furthermore, CARE Ratings gives the benefit of any interest rate reduction or a favourable change in the repayment structure only once the same has been approved in writing by the lender.

- **Leverage and coverage indicators**

  As debt comprises a major part of the capital structure, the leverage indicators for a recently commissioned power plant are higher than the leverage level for a plant that has had a reasonable track record. While evaluating an SPV, CARE Ratings compares the project with its industry peers on parameters such as debt-equity mix, cost of debt, repayment schedule, as well as operating profits generated vis-à-vis the external debt (debt/PBILDT). The debt coverage indicators to be examined include cumulative debt service coverage ratio (DSCR) and minimum DSCR. For projects exposed to refinancing risk, CARE Ratings relies on the project life coverage ratio (PLCR) to understand the available cover and that in turn determines the refinancing ability of the asset. CARE Ratings also factors in the financial flexibility of a project, which is determined by the availability of surplus cash flows over the tenor of the PPA, which influences the bankability of the asset. Between two assets having similar DSCRs, the asset having a materially longer tail period will have a relatively superior financial flexibility, and hence, will be able to tap into the financial markets in a better manner.

  CARE Ratings benchmarks the desired coverage indicators depending upon the counterparty for the projects. For example, the credit worthiness of a project with stronger counterparties with lower cumulative DSCR/PLCR may be higher than a project, wherein, the off-taker is a weak state discom.

- **Working capital and liquidity**

  As distribution utilities in India are the weakest link in the power sector value chain, projects generally suffer a delay in receipt of dues. For a weaker off-taker, the requirement of a higher liquidity buffer is incumbent to uplift its credit profile. The major sources of liquidity primarily pertain to available cash balances, expected cash flows, the availability of a debt service reserve account (DSRA) and other liquidity reserves, undrawn working capital limits as well as earmarked equity.

- **Refinancing and foreign exchange risks**
  CARE Ratings views a longer debt maturity profile and ballooning repayment structure positively for a renewable energy project rather than a shorter maturity profile and a front-ended or back-ended repayment schedule. While the short tenor of a facility does expose it to refinancing risks, CARE Ratings analyses the associated risks in relation to the ability of the asset to generate cash flows for the remaining contractual tenor.

  Generally, the cash inflows of a project are denominated in the domestic currency, whereas if the repayment obligations are in a foreign currency and are unhedged either fully or partly, it exposes the project to forex-related risks. CARE Ratings views the entities more favourably wherein the hedging is adequate.

Management and parentage

CARE Ratings first assesses the standalone credit profile of an asset and the same is notched up on the basis of the parentage or sponsor group to which the asset belongs, provided CARE Ratings is able to assess the ability, willingness, and likelihood of the parent providing need-based support to the underlying SPV.

(Refer to CARE Ratings' 'Rating methodology – Notching by factoring linkages in ratings' on our website www.careedge.in).

Furthermore, emphasis is given to factors such as the track record of the group in setting renewable energy projects, underlying capacity at the group level, quality of management, overall group-level financial policies, financial flexibility, and resourcefulness at the parent level. A group having stronger financial flexibility will generally be able to timely access the capital markets, attract investors and enjoy the confidence of the lending community.

Environment, social and governance (ESG) risks

With regard to ESG risks, as solar projects fall under the umbrella of renewable power, they score well on the 'E' part, which stands for compliance with environmental norms. Solar plants aid in reducing the carbon footprint, thus helping in dealing with climate change. Moreover, the consumption of solar power also results in the preservation of resources like coal and gas and these plants do not emit any toxic gases into the environment. However, it remains to be seen how the solar modules are disposed off or recycled at the end of their project life-cycle.

Like any other infrastructure project, solar power requires the acquisition of a large portion of land along with the right of way (RoW) approvals to lay the necessary evacuation infrastructure. This often leads to issues around rehabilitation and compensation between the developers and the landowners or the affected people from the community.

Governance in a corporate is determined by a host of factors, which includes and is not limited to the following, viz, financial reporting, corporate practices, code of conduct, board composition, whistle-blower policies, investor relations, etc. CARE Ratings tries to form a broad opinion from the available information regarding the governance standards of the entity being evaluated.

Conclusion

The rating determination is a matter of experienced and holistic judgment, based on the relevant quantitative and qualitative factors affecting the credit quality of the issuer. CARE Ratings analyses each of the above factors and their linkages to arrive at the overall assessment of the credit quality of the issuer. Credit rating is a futuristic assessment, and the rating outcome is ultimately an assessment of the fundamentals and the probabilities of change in the fundamentals in future.

For solar power projects, project risks assume higher importance in the implementation phase, whereas post-commissioning, the adequacy and stability of cash flows gain higher importance. There are various factors that impact the cash flows thereafter, which include tariffs, generation level, interest cost, debt amortisation schedule, collection days, liquidity buffers, etc. All these factors are collectively analysed to determine the credit risk of the solar project.

[For the previous version please refer to 'Rating Methodology – Solar Power Projects' issued in August 2020]

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About:
CareEdge is a knowledge-based analytical group that aims to provide superior insights based on technology, data analytics and detailed research. CARE Ratings Ltd, the parent company in the group, is one of the leading credit rating agencies in India. Established in 1993, it has a credible track record of rating companies across multiple sectors and has played a pivotal role in developing the corporate debt market in India. The wholly-owned subsidiaries of CARE Ratings are (I) CARE Advisory, Research & Training Ltd, which offers customised advisory services, credible business research and analytical services (II) CARE Risk Solutions Private Ltd, which provides risk management solutions.