Ratings Methodology – Solar Power Projects

[Issued in January 2025]

CareEdge RATINGS AFRICA
A subsidiary of CARE Ratings Limited, India

Evaluation of promoter group & management team

Promoter group

Promoter groups can be broadly classified under the following categories based on their motives, viz., companies which invest in solar projects looking at the tax incentives, Large Independent Power Producers (IPPs) backed by either local/global corporate house or strong private equity players which were attracted by expectation of good IRRs & government thrust, captive power producers who have requirement for large consumption of power and were finding the cost of power from Discoms to be very high, Rooftop solar power largely in residential & commercial premises looking at various government incentives & low cost of power. Out of these different sets of promoters, CRAF considers the one whose main area of business is solar projects as better placed compared to the others because their understanding of various risk factors, the ability to deal with them & long-term commitment to the project would be far better compared to the others.

In evaluation of the promoter group, CRAF also gives due consideration to the total installed & under-implementation capacity of the group in solar sector along-with number of years' experience of the promoter group in the solar sector in Mauritius and/or abroad. Furthermore, well spread out distribution of the total capacity of the group across different geographies is favorably factored in. The promoter groups who have technical expertise, solar module manufacturing capability, EPC capabilities and in-house Operations & Maintenance (O&M) capabilities are considered superior compared to the others.

Financial health of the promoter group along-with its prior stance of supporting the projects of the group are central factors for the rating. CRAF also looks at the policy of the promoters to maintain some liquidity buffers at the flagship company level so that any immediate requirement at any Special Purpose Vehicle (SPV) level can be met in a timely manner. Also, past track record of the promoter group in handling various aspects of solar project are duly considered while rating of the project.

Evaluation of project risk parameters

Availability of land and requisite approvals

Land acquisition & related approvals is considered to be very critical for timely implementation of solar power project as this activity usually takes maximum time in the entire implementation schedule of the solar power project. Government Solar parks offer a plug and play model with availability of land, shared infrastructure and all the related approvals. Accordingly, a solar power project being implemented in a government solar park faces relatively low level of risks related to land acquisition & related approvals as these risks are borne by the solar park developer. For projects outside solar parks, usually IPPs delegate the work of land acquisition to EPC players due to their local connects and expertise in land acquisition. Accordingly, in such cases, terms of EPC contracts should be critically verified with respect to obligations of EPC players for timely acquiring requisite area of land.

Considering the challenges in land acquisition, some off-takers have started to build-in land acquisition timelines in PPAs. In such cases, timely land acquisition would become more critical as any delay beyond the defined timelines could result in reduction in tariff or cancellation of PPAs or curtailment of awarded capacity.

Location of the project, Power generation potential & Quality of resource assessment study

Complexity in the topography of the region is low for ground-mounted solar projects. However, level of irradiation and other climatic and geographical factors including but not limited to areas prone to floods, heavy rains, storms, etc., play an important role in determining the viability of a site for a solar project. For estimation of the expected power generation of a site, CRAF relies on the report of an external agency hired by the project company for conducting resource assessment study. Agency conducting resource assessment study normally provides power generation estimates for the given site at three probability of confidence levels, viz., P-50, P-75 & P-90 whereby P-90 level is considered to be most likely estimate. For completed projects, CRAF takes actual generation vis-à-vis projected generation to gauge the deviations (if any) and the same is built into the projections as well. CRAF considers P-90 level of power generation for its base case analysis of a project.

Technology, equipment supplier, EPC contractors & quality of contracts

Solar modules are one of the critical components of a solar power project whereby technology is fast changing and it is still evolving. With a rapidly evolving technology, it is challenging to ascertain the performance of a newer technology as the risk of equipment failure and module degradation is not known. Accordingly, lack of information about performance of the technology in a given condition is one of the key risk factors for a solar power project which constrains the rating. In cases where project is being implemented through EPC contractors, CRAF critically analyses the terms of the EPC contract to understand the obligations of the EPC contractor for timely completion of the project and LD clauses for any delay in completion of the project.

Evacuation infrastructure

Transmission line availability and access risk is high for renewable energy especially with wind and solar projects compared to traditional power projects because of site-specific and intermittent generation pattern of these resources. Pace of expansion in transmission infrastructure is lagging compared to faster pace of solar capacity addition. Any delay in the construction of transmission infrastructure causes the plant to remain idle despite becoming mechanically complete. Accordingly, CRAF analyses the availability of evacuation infrastructure and in case of under-development transmission line, it verifies the timelines for completion of line vis-à-vis projects' SCOD.

Timelines for completion of the project as per PPA and damages for delay in completion

Timeline for completing a solar project ranges from 12 to 18 months. In case of PPA with State Discom, timeline for completion of solar PV project is predefined. Delays in project completion could result in penalties ranging from monetary penalties/ Performance Bank Guarantee (PBG) invocation to reduction in tariff and cancellation as stipulated in the PPA. Accordingly, for under construction projects, CRAF critically analyses the current status of the project vis-à-vis envisaged completion timelines, chances for delay in completion of the project and its consequences as per the PPA.

Financial Closure

For timely completion of the project, timely financial closure is positively considered by CRAF. In financial closure, CRAF critically evaluates the status of infusion of promoter funds, 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 the promoter's contribution infused in other than equity form, DSRA creation & maintenance, creation of Inverter replacement reserve, etc.).

Innovative concepts

Over the last few years, GOI has announced a slew of innovative concepts in the solar power sector like solar-wind hybrid projects, floating solar power projects, solar projects linked to manufacturing of solar modules, solar projects with battery storage and round the clock supply. Each of these projects are new in Mauritius conditions and are expected to exhibit higher amount of risks with few unknown risk factors compared to a normal solar power project.

Credit ratings of the solar power projects critically factor promoter group & above-said project risks when it is at the project stage. However, once it becomes operational, weightage to promoter group is relatively on the lower side as it being an infrastructure project which is financed without any recourse to the promoter group. Accordingly, for an operational solar project, higher weightage is given to the quality of the asset.

Evaluation of project operations / Business risk

O&M contractor and quality of O&M contract

Due to low number of moving parts and stationery PV modules, O&M costs for a solar plant are significantly lower as compared to other sources of energy. O&M activities can either be undertaken in-house or can be outsourced to an O&M contractor. O&M-related risks would be mitigated to an extent if the O&M is carried in-house as it provides adequate control and check to the developer. In case, O&M activities are being carried out by a contractor, CRAF examines the key terms of O&M contract.

Operating performance of the plant

Solar projects post-completion normally requires some stabilization period, and during this period, the performance is observed to be sub-optimal till the solar PV modules achieve consistent generation pattern upon weeding out initial teething problems. For a stabilized project, CRAF evaluates the trend of actual CUF vis-à-vis P-90 level estimates as per the resource assessment study to understand future performance of the project. Electricity generation through solar power is also subject to seasonal variations, i.e., solar generation usually peaks in summers and bottoms during the monsoon season; accordingly, there would be no linearity in power generation by a solar project during the year.

Evaluation of off-taker risk viz. PPA - tenure, quantum, renewal, pricing

Tenure, quantum and renewal: Off-take or market risk is mitigated in solar power project to a large extent by entering into a long-term PPA. In case off-taker is state Discoms / central agency like SECI / NTPC / NVVN, PPA is executed for a period of 20-25 years, whereas in case of third-party off-taker, PPA is executed for a period of 3-15 years. Upfront execution of PPA for the life of the project is considered positively by CRAF as it largely eliminates the sales risk and renewal risk. Also, tenor of PPA should ideally correspond with the tenor of debt. Ideally, there should be minimal exit options in the PPA so that sanctity of PPA is maintained with low renewal risk.

Pricing: PPA signed with state Discom / central agency is mostly at a fixed tariff for the entire tenor of PPA, whereas in case of a private party off-taker, the tariff is either linked to some existing market rates or at fixed tariffs. Fixed tariff structure provides better predictability to the revenue stream of the company. Any renegotiation in tariff structure for the concluded PPA leads to reassessment of the debt servicing capability of the project.

Evaluation of Off-taker risk- Quality of Off-taker, diversification and payment track record

Quality of off-taker & diversification: Counter party risk could significantly impact the credit quality of the project as there is long-term tie-up of the project with off-taker with minimal chances to move out of it. Accordingly, off-taker plays a critical role in arriving at the rating for the project. Off-takers are broadly classified into two categories, viz., State Discoms/ Central agencies and third-party off-takers. Predicting the quality and behavior of off-taker for a reasonably long period of time as long as up to next 20-25 years is very difficult.

Although for assessing the quality of first category of off-taker, CRAF relies on the past financial performance of off-taker, their credit rating, past payment track record, health of respective state government, structural issues (if any) with the off-taker, movement in the level of AT & C losses over a period of time, trend of tariff revision, trend of regulatory approval systems, quality of actual customer base, their past stance of honoring PPA commitments, etc. In case of assessing the quality of third-party off-taker, CRAF relies on the business fundamentals of the entity, their credit rating, analysis of past performance, market standing, expected performance of the industry in which the entity operate, etc. CRAF considers 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 analyzing fundamental credit quality of the off-taker, CRAF also analyses the payment track record of the off-taker and attaches due weightage for timely payment track record of the off-taker. For an operational project, CRAF analyzes the monthly billing & payment track record since commissioning of the project. Barring a few state Discoms & central agencies, majority of the state Discoms in some Geographies have a weak financial profile and they demonstrate delayed payment track record for varying period of delays which typically constrain the rating for a project.

Evaluation of financial risk & credit enhancements

Revenue & Profitability

CRAF considers P-90 level generation to frame the base case projected revenue from the project. For an operational solar project, real cost structure is O&M cost & finance cost. O&M costs are very marginal for a solar project leading to very high PBILDT margin. Debt tie-ups for a solar project are usually at floating interest rates and accordingly, finance cost could vary depending upon the interest rate movement. Depreciation would vary depending upon the policy adopted by the company. Accordingly, CRAF critically looks at the cash accruals from the project while analyzing the project's debt repaying ability.

Leverage

As a normal trend, solar projects are financed at a debt equity ratio of 75:25. For an operational project, capital structure of the company would depend more on the depreciation policy adopted by it apart from its revenue generation potential. Accordingly, capital structure of the company is seen in consonance with its depreciation policy. Furthermore, CRAF also looks at the Total debt / PBILDT to nullify the effect of depreciation.

Debt Service Coverage Ratio (DSCR)

CRAF considers DSCR as one of the critical ratios to assess the relative debt servicing capability of the project as it largely captures all the critical aspects of the project. CRAF analyzes 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 analyzing the debt repaying capability of the developer. CRAF also sensitizes the base case DSCR for the key variables of the project like CUF, tariff rates, finance cost, payment delay from off-taker, etc.

Liquidity Back-ups

As power generation from a solar project is seasonal in nature & there exists counter party delayed payment risk, CRAF considers that adequate liquidity back-up as an important rating consideration as debt repayments are normally evenly spread out (monthly/quarterly basis). The higher the delay by the counter party, the greater the liquidity buffer the developer needs to maintain to curtail the off-taker payment risk. For a solar project liquidity back-ups are created primarily in the form of DSRA which cover 1-2 quarters debt repayment obligations in the form of FD / bank guarantee / working capital limits.

Refinancing risk

Loan from banks / FIs for financing of a solar project are available for a tenor of maximum up to 17-18 years which largely corresponds to the project life with some residual tail period whereby there would be largely no refinancing risk. However, when a solar project is funded by some loans and/or capital market instruments for a tenor of say 3 / 5 / 7 / 10 years, it is exposed to the refinancing risk for varying degree. Any project exposed to refinancing risk is considered negatively by CRAF, however, the extent of its impact on the credit profile would differ on a case-to-case basis.

Evaluation of regulatory risks

Apart from various regulatory aspects, CRAF critically looks at the following evolving aspects while rating a solar power project as regulatory environment is also evolving;

- Any differences in the central vs. state policy with respect to allocation of land for a solar project
- Honoring of the executed PPAs by the off-takers; few instances of state Discoms asking for renegotiation of tariff in concluded PPAs have been observed. Any renegotiation of PPA tariff rate or tenure of PPA could materially change the project dynamics and its debt servicing capability
- Revision in levy of GST rates on solar modules and the safeguard / anti-dumping policy of Government and allowance/disallowance of higher tax rate in the tariff under the change in law clauses of the PPAs
- Levy of wheeling and banking charges on solar power project by few states
- Cancellation of concluded solar project auctions
- Delay in availability of evacuation infrastructure for under implementation projects, inadequate capacity of sub-stations leading to power curtailment issues once the project is operational.

[Reviewed in January 2025. Next Review due in January 2026]

Contact

Saurav Chatterjee	Director & Chief Executive Officer	saurav.chatterjee@careratingsafrica.com	+230 - 5862 6551 / 5955 3060
Vidhyasagar Lingesan	Chief Rating Officer	vidhya.sagar@careratingsafrica.com	+230 – 5273 1406 / 5955 3060
Mradul Mishra	Media Relations	mradul.mishra@careedge.in	+91 - 22 - 6754 3596

CARE Ratings (Africa) Private Limited

5th Floor, MTML Square, 63, Cyber City, Ebene, Mauritius
Phone : +230 - 58626551 l www.careratingsafrica.com

About Us:

CareEdge is a knowledge-based analytical group that aims to provide superior insights based on technology, data analytics and CARE Ratings (Africa) Private Limited (CRAF) is the first credit rating agency to be licensed by the Financial Services Commission of Mauritius in May 2015. It is also recognized by Bank of Mauritius as External Credit Assessment Institution (ECAI) from May 2016. CRAF is also licensed by Capital Markets Authority of Kenya to operate as a Credit Rating Agency in Kenya. CRAF intends to expand across other geographies in Africa with Mauritius as its hub of operations. With an equitable position in the Mauritius capital market, CARE Ratings (Africa) Private Limited provides a wide array of credit rating services that help corporates to raise capital and enable investors to make informed decisions backed by knowledge and assessment provided by the company.

CRAF's shareholders are CARE Ratings Limited, African Development Bank, MCB Equity Fund and SBM (NFC) Holdings Limited.

CRAF gets its technical support in the areas such as rating systems and procedures, methodologies, etc. from CARE Ratings Limited on an ongoing basis. CARE Ratings Limited, with an established track record of rating companies over almost three decades, follows a robust and transparent rating process that leverages its domain and analytical expertise backed by the methodologies congruent with the international best practices.

CRAF's Rating Committee consist of full-time members comprising of Senior Rating officials from CARE Ratings Limited and a panel of experienced professionals from Mauritius and African Development Bank.

CRAF has had a pivotal role to play in developing bank debt and capital market instruments including MMIs, corporate bonds and structured credit.