



## Methodology Independent Power Producer Rating

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### Summary

This methodology outlines PACRA’s approach to rating Independent Power Producers. The structure of IPPs is unlike that of other corporates, in that they operate in a heavily regulated environment, which insulates them from several business and financial risks. PACRA’s analysis, when rating IPPs, focuses primarily on the contractual and regulatory framework surrounding an IPP, and quantitative factors, focusing mainly on financing structure and cash flows. Meanwhile, qualitative factors such as ownership, governance and management supplement the analysis.

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## 0. Introduction

- Scope
- Rating Framework

## Introduction

*A sound financial ecosystem is critical for functioning of any economy. It is defined by interaction of providers of funds - savers, users of funds - borrowers, financial institutions, and regulators. This system ensures smooth flow of funds between savers and borrowers; wherein, financial institutions provide platform for their interaction. Regulatory oversight safeguards the sanctity of this system. Like all systems, financial system has its own set of challenges. The most prominent being “Risk”; the risk that some participant may not be able to meet its commitments. All participants do their best to manage this risk to maximize their return. This is not possible unless we have independent information on this risk. Here comes expertise of rating agencies, providing independent opinion on credit risk. Flow of funds is only possible when the provider of funds has confidence that user of funds will be able to return these in a timely manner and as committed. Ratings help build this confidence. A higher rating means higher likelihood of timely repayment compared to a low rating. Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company’s performance as well as for peer comparisons.*

**0.1 Scope:** This methodology explains PACRA’s rating criteria applicable to Independent Power Producers (IPPs). IPP is an entity that owns facilities to generate electricity. IPPs are special purpose companies. IPPs in Pakistan operate in a regulatory environment, insulating them from multiple business and financial risks. Moreover, IPPs enjoy tax-free status. IPPs maintain power purchase agreements (PPA), in local scenario, with Central Power Purchasing Agency (CPPA-G) and K-Electric (KE). This methodology covers all IPPs, mainly, i) Thermal, including fuel, gas, and coal based, and ii) Renewable including hydel, bagasse, wind, and solar.

**0.1.1** IPPs face a single buyer market. CPPA-G is the key buyer of electricity from an IPP operating in Pakistan; in certain cases KE buys electricity in its respective geography. IPPs negotiate a tariff (or accept upfront tariff) with the regulator, National Electric Power Regulatory Authority (NEPRA). NEPRA has put in place various rules and regulations to govern all segments of the power sector, including generation, transmission, and distribution. IPPs are generally insulated from underlying economic risks through long-term PPAs (spanning 25-30 years) with underlying take-or-pay contracts, supported by explicit government guarantees subject to conditions mentioned therein.

**0.1.2** The magnitude and relevance of risks vary for IPPs at different stages in their lifecycle. For example, for an IPP in its pre-COD stage the completion risk would be in focus. Meanwhile, other things remaining the same, for an operational IPP, performance risk would be in focus while completion risk would not be relevant.

**0.2 Rating Framework:** PACRA’s risk analysis for IPPs begins with looking at its profile. Here, PACRA studies the contractual framework underlying a particular IPP, to determine the risks retained in the project and those that are a pass-through, as well as the regulatory framework applying to the IPP. Following this, PACRA looks at the ownership, governance and management aspects. This is followed by evaluation of three key areas: completion risk (in case of pre-COD), performance risk (in case of post-COD) and financial risk.

## 1. Profile

- Background
- Principal Project Agreements (PPA)
- Regulatory Framework

### Profile

**1.1 Background:** PACRA reviews the background of the entity to understand its evolution from where it started to where it currently stands. We analyze how and through what means the entity has achieved the desired expansion. PACRA looks at the progress of the entity from its historical past. The progress of the entity helps PACRA in determining the ability of the entity to successfully realize its strategy. The significant factor here for PACRA is to assess whether the entity has achieved the desired expansion through organic growth or acquisitions. Meanwhile, the source of funding for desired growth is also critical.

**1.2 Principal Project Agreements:** All IPPs in Pakistan are governed by project agreements, (Implementation Agreement, PPA and Fuel Supply Agreement/Gas Supply Agreement), that need to be carefully analyzed. The Project Agreements serve as a basis for an evaluation of i) Regulatory risk, and ii) Compensation to the IPPs if there is non-performance to any of these agreements. PACRA shall extract and examine the salient points within these agreements that would have bearing on the risk profile.

**1.2.1 Power Purchase Agreement (PPA):** PPA is entered into between the IPPs and the power purchaser. Term of the contract, clarity of risks assumed by the power purchaser and the IPP, insurance coverage under the PPA, pre-mature termination clauses and its impact on various stakeholders, are key areas to review. PACRA also assesses performance requirements and associated penalties (liquidated damages) in the event of non-performance, or due to force majeure, and its impact on the project. PACRA looks at the provision for step-in rights for either the purchasing utility, or the bondholders/lenders, in the event of default by the project sponsor.

**1.2.2 Implementation Agreement (IA):** This agreement takes place between the IPP and the GoP. The IA determines how the PPA is governed. IA mentions various types of supports to be provided by GoP, including facilitating company contractors, security protection, GoP guarantee etc. It also mentions the obligations of the project company for project construction and subsequent operations. Meanwhile, restriction on transfer of shares, force majeure, mechanism to give notice to GoP of power purchaser’s default, dispute resolution etc. are also important clauses that are stated in IA.

**1.3 Regulatory Framework:** In the local context, IPPs are governed by the power policies of National Electric and Power Regulatory Authority (NEPRA). These policies lay out the guidelines for power generations projects, of which two key components are tariffs and terms of PPAs. PACRA analyses each IPP with reference to the relevant power policy applicable to it.

<b>Key Features of Power Policies</b>	
<b>Power Policy 1994</b>	
<ul style="list-style-type: none"> <li>▪ Levelized tariff US\$ 0.059 (US\$ 0.065 for first 10 years)</li> <li>▪ Incentive of US\$ 0.025 in first 10 years-if COD by 1997</li> <li>▪ Performance of fuel supplier guaranteed, if public sector</li> <li>▪ For Hydel Power Projects (over 20 MW), ROE was allowed upto 25%</li> <li>▪ Tariff component of Capacity Price &amp; Energy Price</li> <li>▪ PPA for 15-30 years introduced</li> </ul>	
<b>Power Policy 1998</b>	
<ul style="list-style-type: none"> <li>▪ Corporatization of WAPDA, Privatization of KESC, demand 25000 MW -2008</li> <li>▪ Exploiting local coal and hydropower potential</li> <li>▪ International Competitive Bidding (ICB) introduced</li> <li>▪ Unsolicited bids for hydropower &amp; local coal projects</li> <li>▪ No guarantee by Govt. on fuel supply</li> </ul>	

<ul style="list-style-type: none"> <li>▪ Co-Gen allowed but restricted to 5% in a year</li> <li>▪ Water Use Charge -by Provincial &amp; AJK Govts.</li> <li>▪ Hydel Power Projects &amp; local coal projected provided 90% First Year Allowance</li> <li>▪ Off grid solutions introduced, NEPRA may allow policy deviations</li> </ul>
<p><b>Power Policy 2002</b></p> <ul style="list-style-type: none"> <li>▪ Referred to surplus power in 90's - harmful for Economy</li> <li>▪ Installed capacity at 17664 MW (31% IPP), half population deprived</li> <li>▪ Four Projects mode (a) private, (b) public, (c) P3, (d) public sector &amp; divested,</li> <li>▪ ICB for solicited sites, Negotiated/ICB for Raw sites</li> <li>▪ JV allowed with main international sponsor</li> <li>▪ GOP guarantee for Implementation Agreement, Power Purchase Agreement, Fuel Supply Agreement, Coal Supply Agreement, Water Use License</li> <li>▪ Water Use Charge was fixed at Rs. 0.15/kwh</li> <li>▪ Dispatch as per Economic criteria</li> <li>▪ Integrated power projects in policy</li> </ul>
<p><b>Re Power Policy 2006</b></p> <ul style="list-style-type: none"> <li>▪ For small hydropower (less than 50 MW), Wind &amp; Solar Projects</li> <li>▪ De-regulated Hydel Power Projects (5MW) and Net metering Projects (1MW)</li> <li>▪ Mandatory purchase by NTDCL/CPPA</li> <li>▪ Road map for Short Term (2008), Medium Term (2012), Long Term (after 2012)</li> <li>▪ Targets a minimum RE of 9700 MW by 2030</li> <li>▪ Net metering allowed for surplus generation</li> <li>▪ Allowed three modes of tariff Negotiated, Competitive and UF Tariffs. Wind/Hydrology risk by PP</li> </ul>
<p><b>Power Policy 2015</b></p> <ul style="list-style-type: none"> <li>▪ Four Projects mode (a) private, (b) public, (c) P3, (d) public sector &amp; divested,</li> <li>▪ PPIB &amp; Provincial Agencies to implement the policy</li> <li>▪ Small Hydel Power Projects, UFT as announced by NEPRA</li> <li>▪ Water Use Charge of Rs. 0.425/kwh to be paid to province/AJK (NHP)</li> <li>▪ Alternate modes, introduced for fast track</li> <li>▪ Attractive IRR/RoE shall be allowed by NEPRA</li> <li>▪ IPPs Incentives to be available to public sector projects</li> </ul>

## 2. Ownership

### Ownership

- Ownership Structure
- Ownership Business Acumen
- Financial Strength

**2.0** The minimum equity requirement to finance IPPs in Pakistan is 20-25%. Hence, the sponsor presents the first source of risk for these projects. PACRA evaluates the following factors to gauge the risk posed by sponsor to the project.

**2.1 Ownership Structure:** The assessment of ownership begins by looking at the legal status of the entity. This is followed by an in-depth study of the shareholding mix in order to disentangle structure of ownership. Key factors that are considered for this purpose, inter-alia, include: i) shareholding structure which includes whether the individual(s) own the entity directly or indirectly,

ii) foreign or local shareholders, iii) whether the entity is owned by a single group or through a combination of entities and individuals, and iv) whether it is part of a group or a standalone entity. All these deliberations are done to identify the man of the last mile. PACRA further considers how an entity is actually run, as, at times, entities are run as family concerns despite being legally structured as a company. PACRA solicits documents related to ownership structure (i.e. articles of incorporation, shareholder agreement(s) amongst equity partners etc.). Meanwhile, stability in the ownership structure is also taken into account, particularly during pre-COD.

**2.2 Business Acumen:** PACRA gauges the sponsors’ business acumen. Having a strong business acumen set has been critical for sustainable success. PACRA analyzes business acumen through two primary areas: i) industry-specific working knowledge, and ii) strategic thinking capability. The project sponsor’s previous involvement with power projects that have been built and operated successfully is evaluated. Successful experience in building and/or operating power plants is positive rating factor. However, if the building and operations of the plant are outsourced to an expert, it would act as a mitigant for sponsors’ lack of experience, but depending upon the strength of the expert.

**2.3 Financial Strength:** PACRA analyzes the ability and willingness of the major shareholders to support the entity both on a continuing basis, and support in times of crisis. Here, PACRA gives due importance to: i) behavior of the major shareholders to provide timely and comprehensive support in times of need in the past, ii) prospective view of key shareholders, incase such need arises, iii) other businesses of sponsors, and iv) the level of commitment of the major shareholder with the entity in providing capital support. In case of no explicit commitment, PACRA attempts to form a view on availability of likely support. Support, in this context, refers strictly to financial support, rather than operational support. The scope for looking at other business of sponsors includes overall profiling of the key sponsors in the context of identifying the resources they have, outside the entity. The credit quality of the sponsors is important to ensure that they will be able to meet any future obligations, in particular, contingent equity requirements, both pre-COD and post-COD stages.

***Commitment:** PACRA looks for evidence of the sponsor’s commitment to the project. If the sponsors have significant resources and time already invested in the project, they are less likely to abandon it. Higher levels of upfront equity investments are considered a positive factor. The strategic importance of the project to the sponsor is also considered. Commitment may be in the form of undertaking to cover cost overruns, and/or to provide liquidity support during the life of the project.*

### 3. Governance

- Board Structure
- Members’ Profile
- Board Effectiveness
- Transparency

### Governance

**3.0** PACRA’s assessment of governance involves both systematic analyses of governance data and information, and the more contextual review of the entity’s governance practices. PACRA considers four main factors while assessing the governance structure of the entity: i) board structure, ii) members profile, iii) board effectiveness, and iv) transparency.

**3.1 Board Structure:** This comprises assessment of board on various criteria including overall size, presence of independent members, and duration of board members’ association with the entity, overall skill mix and structure of board committees. Size of the board may vary as per the scope and complexity of the operations of the entity. While a very small board is not considered good, similarly, reaching a decision in an effective and efficient manner may not be possible in case of a large board. A healthy composition of board includes the presence of independent/non-executive members having limited relationship with the sponsoring group of the entity. Meanwhile, same individual holding chairman and CEO positions is considered weak governance practice. The chairman is expected to have a non-executive role. Compliance with the code of corporate governance is also examined. PACRA also examines the independence of governance from major shareholders. Lastly, PACRA

evaluates number of board committees, their structure, and how these committees provide support to the board. A board with higher number of members should have higher number of committees in place to assist in performing its role.

**3.2 Members’ Profile:** PACRA collects information regarding profile and experience of each board member. This helps in forming an opinion about overall quality of the board. Moreover, diversification in terms of knowledge background and experience is considered positive. However, a fair number of board members should have related experience.

**3.3 Board Effectiveness:** In PACRA’s view, the role of the board is to work with management in steering the entity to its performance objectives and to provide critical and impartial oversight of management performance. PACRA analyzes the type and extent of information shared with board members, and quality of discussions taking place at board and committee levels. Effective oversight requires frequent sharing of detailed information covering various aspects of business and market development. Meanwhile, PACRA also reviews the number of board meetings held during the year as these should be justified with the number of issues/matters arising. Board members’ attendance and participation in meetings is important, and is gauged by viewing board meeting minutes.

**3.4 Transparency:** Quality of governance framework is also assessed by the procedures designed by the board to ensure transparent disclosures of financial and other information. This can be achieved through: i) ensuring independence of the audit committee, ii) strengthening the quality of internal audit function, which may be in-house or outsourced, and iii) improving quality of external audit by engaging auditors which are included in the State Bank of Pakistan’s panel of auditors and/or have a satisfactory QCR rating.

*Accounting Quality: PACRA reviews the quality of an entity’s accounting policies as reflected in its notes to accounts, auditors’ comments and other disclosures which are part of its financial statements. Adherence to accounting standards is assessed, particularly for unlisted concerns.*

## 4. Management

- Organizational Structure
- Management Team
- Management Effectiveness
- Control Environment

## Management

**4.0** Quality management, effective systems and controls, and well-defined strategy are essential ingredients for a successful entity. IPPs maintain a lean management structure as, in most cases, the EPC function is contracted out, while the IPP mainly establishes an oversight function, while developing a comprehensive MIS reporting, in liaison with the contractors.

**4.1 Organizational Structure:** The assessment of management starts with PACRA conducting an in-depth analysis of organizational structure of the entity. On a standalone basis, PACRA looks into the hierarchal structure, reporting line and coherence of the team. However, PACRA also places the organizational structure in the entity’s relative universe for comparison in order to form opinion of optimal structure within the sector in context of its complexity. Number of management committees are established to monitor performance and assure adherence to the policies and procedures. PACRA measures the effectiveness of the entity by forming an opinion on the quality of management committees.

**4.2 Management Team:** Analysis of management includes evaluating experience profile of key individuals, management’s track record to date, in terms of building up sound business mix, maintaining operating efficiency and strengthening the entity’s market position. Although judgment about management team is subjective, performance of the entity over time provides a more objective measure. PACRA analyses the quality and credibility of management’s strategy, examining plans for internal or external growth. Loss of key personnel, particularly members of senior management, can have potentially adverse effects on overall standing of the entity relative to peers. Hence, HR turnover is reviewed to determine the stability of critical staff, with particular focus on key departments.

Similarly, dependence of the management team on one or more persons is considered risky. In addition, the entity’s human resource policies are also reviewed to gauge its emphasis on retaining and recruiting vital staff.

***Key-man Risk:** Key-man risk occurs when an entity is heavily reliant on an individual, or a limited number of individuals, who are accepted as the key holder(s) of important intellectual capital, knowledge or relationships. While this type of risk is more common in small to medium-sized entities, it can also exist in larger entities and is relatively challenging to benchmark and, hence, mitigate. PACRA attempts to identify the extent to which an entity is dependent on the expertise of such individual(s) and to ensure policies exist for succession/redundancy to limit the adverse impact of such a person unexpectedly leaving, on the entity.*

**4.3 Management Effectiveness:** PACRA conducts a qualitative review of management systems and technology infrastructure to assess management effectiveness. A key measure of management effectiveness is its track record of delivering on past projections and sticking to strategies. One of the key tools available to management to effectively run an organization is the information provided to it. It is critical that information available to management be concise, clear and timely, so it can be interpreted and understood, and the management can respond accordingly. An important part of this analysis is looking at the entity’s MIS. PACRA further assesses whether management has developed any critical success factors to evaluate performance of various business segments, and their efficacy. Management meeting minutes are also reviewed, wherever available, to assess the quality of discussion.

***MIS:** System generated – real-time based – MIS reports add more efficiency in decision making whether related to operational, financial or strategic issues. PACRA evaluates the quality and frequency of the MIS reports used by the management team to ascertain that decision-making within the entity is information-based.*

**4.4 Control Environment:** A robust control environment ensures that the entity is driven by processes instead of being dependent upon individuals. Therefore, evaluation of the quality of policies and procedures, and invariable adherence to these, remains pivotal in the assessment of control environment. Segregation of duties and occupancy of all positions would provide comfort as to the minimization of operational risk. PACRA also assesses the integration of the entity’s operations into technology would be pivotal. Built-in controls should demonstrate that conflict of interest is avoided

## 5. Completion Risk

- Construction Risk
- EPC Contract
- Delay in COD

### Completion Risk

**5.1 Construction Risk:** Generally, construction risk is the risk that the IPP project is not completed on time, within the scheduled budget and up to the required performance standards. In reviewing these risks, PACRA considers factors such as the appointed contractors, projected costs, delay risk, and other terms of the construction contract.

<i>Construction Risk</i>	
<i>Thermal Power Projects</i>	<i>Renewable Energy Power Projects</i>

- Risk associated with physical construction of the power plant and process parameters.
- Construction risk of the supporting infrastructure, depending on the nature of the project, for example, railway siding for coal transportation, in case of coal-based power plants.
- If the EPC is awarded to multiple contractors, then coordination between them becomes increasingly important.
- Risk associated with physical construction of a plant and design operating parameters.
- Critical components:
  - Solar: Solar Modules
  - Wind: Wind Turbine
  - Transmission line availability and access risk

**5.2 Engineering, Procurement and Construction (EPC) Contract:** The EPC Contract governs the contractual relationship between the IPP and the turnkey contractor, and outlines the scope of work, rights and responsibilities, the construction period during which the contractor is responsible for design, construction, completion and commissioning of the power complex as well as the turnkey contract price. EPC constitutes major portion of the total project cost. Hence, a lump sum fixed price contract would be favorable to the IPP as the first layer of protection against cost overrun arising from any unexpected increase in variable contract costing above the budgeted cost. Basically, the EPC contract should ensure that the IPP is protected against any cost overrun and delay risk, as these risks have been passed on to the turnkey contractor. PACRA would evaluate that there are enough cash reserves and credit lines available to cover instances of cost overruns/delays.

***In-house vs. Outsourced:** In case the project company’s management decides to keep the EPC function in-house to be executed by own team, experience of the team would become important in addition to sponsor’s ability to absorb escalated costs in case the project delays. However, PACRA considers this arrangement as relatively risky compared to a contract entered into with an established EPC contractor. When the EPC is outsourced to a contractor, the track record of the EPC contractor in both the local and the foreign market is examined. An EPC contractor of international repute with a long-standing local EPC experience is rated higher as compared to one with similar international credentials but lack of operating experience in Pakistan, or in any other emerging economy.*

**5.2.1 Parts of a Standard EPC Contract:**

- a) Off Shore Equipment Supply Contract
- b) Onshore – Construction contract

Generally, both Onshore and Offshore contracts, are contracted with the same party, as it is more conducive to facilitate coordination and synergies. This is the case in Pakistan. However, there is no contractual binding in this regard and these two contracts may be executed with different parties.

**5.2.2 Performance Bonds and Guarantees:** An important part of the EPC is the performance guarantee underlying the assurance to achieve timely COD by the EPC Contractor.

**5.2.3 Early Completion Incentives:** The existence of early completion incentives, reasonable liquidated damage provision and sufficient insurance coverages provide some protections in the event of unexpected delays, damages or overruns. Early completion incentives are justified by the debt-servicing cushion that may accrue to the company as per its contractual obligations.

**5.2.4 Independent (Lenders’) Engineer’s Report:** During the construction period, PACRA monitors the construction progress by examining the construction progress report prepared by an engineering consultant, which is responsible for overseeing and monitoring the construction progress. This report becomes critical as the IPP is nearing COD.



**5.2.5 Project Funds Agreement:** The PFA is an agreement between the IPP, equity financiers, debt financiers, the project-monitoring bank, and the security trustee. The finalization of the agreement coincides with the financial close. PACRA carefully studies the form of sponsor equity support along with loan agreements/committed bond funds, performance guarantees, included in PFA.

**5.3 Delay in COD:** In case of delay in commissioning of the plant, PACRA analyzes the coverage provided by the EPC contract and the amount of LDs that can be passed on to the contractor. In case the sponsor has to meet the LDs (or a portion of it), PACRA incorporates it accordingly in its rating analysis.

## 6. Performance Risk

- O&M Contract
- Fuel Supply Risk
- Insurance Cover

### Performance Risk

**6.0** Performance risk evaluates challenges relating to the operation and maintenance of the power plant. The quality and provisions of the O&M needs to be factored in adequately, even before COD. The operation and maintenance risk is the risk that the project will result in lower than expected productivity or net electrical output as a result of unplanned outages and/or failure to meet the performance standards. PACRA assesses the experience and responsibilities of the power plant operator.

**6.1 Operations and Maintenance (O&M) Contract:** This contract mentions understanding of the operator’s relationship to project owners, the scope of work, and its rights and responsibilities. PACRA looks for measures to cover instances where the operator’s performance is below the required performance standards, perhaps in the form of performance guarantees and associated liquidated damages and ability to be replaced, if necessary.

***In-house vs. Outsourced:** In case the company decides to assemble an in-house O&M team, the experience profile of the team is important to analyze. Nevertheless, the risk is considered higher compared to outsourcing it to an established contractor as financial losses that may arise due to any operational hitch are to be absorbed by the project company. If the O&M activities are to be contracted-out, PACRA takes note of the arrangement to manage these sub-contractors. If the contractors are in default of their obligations set out in the O&M agreement, PACRA expects some form of compensation to be set out in the agreement.*

***Experience and credibility of operator:** PACRA assesses the experience and track record of the operator in operating similar power plants as well as the latest financial position of the operator. PACRA takes note of the existence of technical support and spare parts from the major equipment suppliers at the power plant.*

***Plant performance:** The assessment on the plant’s performance in adherence to the key performance measures such as plant availability, dependable capacity, efficiency (amount of energy produced per component of fuel), and emissions need to be carried out. The effects on cash flows as a result of higher operating costs, penalty payments under the PPA which should be covered by liquidated damages claimable from the operator, and loss of revenue due to breakdown of machinery or force majeure events shall also be analyzed. The motivation/incentives for operator such as performance-based compensation and the importance of the project to the operator are also looked at. The type of power plant and the technology used in these plants to some extent influence the operating risks.*

**6.2 Fuel Supply Risk:** Ensuring the reliability of fuel supply risk and dynamics of change in the fuel costs is also examined. PACRA evaluates the fuel supply agreement with fuel suppliers. A long-term supply agreement is desirable as well as the existence of take-or-pay clause. Alternative fuel sources and a list of alternative fuel supplies are evaluated by PACRA to determine the risk of over dependence on any one supplier. The ability to pass through fuel cost escalations to the off-taker such as GoP is also desirable from the rating’s point of view.

**6.2.1** In latest PPAs, the GoP does not guarantee the fuel supplier’s obligations. However, the risk is a pass-through to the fuel supplier and, hence, the fuel supplier pays the requisite liquidated damages (LDs) to the IPP, in the event of non-performance on FSA. However, this practice has not been tested and IPPs remain majorly responsible for payment of LDs in case of closure of plant.

**6.2.2** Availability of Required Natural Resources in case of Renewable Energy (RE) Projects: Resource variability risk is unique to the RE IPPs. This is the risk of variability in availability of the required natural resources, and therefore, the effective energy output may show an inconsistent pattern. PACRA reviews the PPAs to ascertain if the resource variability risk is assumed by the IPP or the power purchaser. In recent PPAs resource variability risk is assumed by RE IPPs. PACRA analyzes historical trend of resource availability and compare the performance of the IPP with other similar power producers situated within same location.

<i>Fuel Supply Risk</i>	
<i>Thermal Power Projects</i>	<i>Renewable Energy Power Projects</i>
<ul style="list-style-type: none"> <li>▪ Risks of the sources of supply, distance from the source, reserve availability, contractual obligation of the seller and price of supply.</li> <li>▪ Evaluation of the water availability as per allocation approved by the Government in relation to the water requirement for the project, sources of supply, track record of water availability and storage capacity at the power plant site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of variability in availability of resources:                             <ul style="list-style-type: none"> <li>▪ Solar: Solar irradiation, which is susceptible to weather conditions at the project location. Geographically diversified operations are desirable.</li> <li>▪ Wind: wind speed, which is susceptible to weather conditions at the project location. Geographically diversified operations are desirable.</li> <li>▪ Bagasse: Availability of sufficient crop, particularly off-season</li> </ul> </li> </ul>

**6.3 Insurance Cover:** PACRA analyzes the comprehensiveness of insurance coverage for the IPP against various risk factors including plant and machinery damage, business interruption losses, and/or losses due to any force majeure events. Risk ratings may take comfort in cases where insurance package adequately covers the identified risks; although this may not result in higher rating.

## 7. Financial Risk

### Financial Risk

- Off-Taker Risk
- Financing Structure Analysis
- Liquidity Risk
- Working Capital Financing
- Coverages
- Capital Structure

**7.1 Off-Taker Risk:** The off-taker for IPPs is CPPA-G / K-Electric. The credit strength in terms of the ability and willingness of the off-taker to pay its obligations are assessed. In Pakistan, the GoP, under its sovereign guarantee, covers all obligations of the power purchaser given IPPs meet its performance parameters. As is the case of any other sovereign, GOP is not likely to default on its local currency obligations. This acts as a mitigant of financial risk related to the off taker.

**7.2 Financing Structure Analysis:** PACRA analyses financing structure in detail. The structure should spell out the principal terms, conditions and covenants of the debt facility, such as repayment pattern, security, and designated accounts. Terms, conditions and covenants under the issue structure are directed towards ensuring the solvency of the project and the requirement of the IPP to manage its

cash flows and service its debt obligations. Certain structural features and covenants that may provide comfort to assess credit protection include:

**Minimum Debt Service Coverage Ratio (DSCR):** This is the minimum coverage of debt service by revenues generated by the IPP.

**Debt repayment schedule:** PACRA shall monitor the debt repayment schedule over the duration of the facility and whether the payments have been made according to the schedule. Timeliness in meeting both principal and interest payments is considered important.

**Designated Accounts:** The designated accounts to be opened and maintained include the finance service account, finance service reserve account, operating account, escrow account, disbursement account, etc. PACRA shall understand the functions and workings of such accounts, the minimum balance requirement in the designated accounts (if any), etc. as these serve to address the liquidity risk associated with the project.

**Maximum debt to equity ratio:** PACRA monitors the trend in debt to equity ratio historically and that forecasted for the entire period of the facility.

**Legal structure, credit enhancements and other financial covenants:** PACRA examines other features including legal structure, any measures to minimize cash leakage and tighter ring-fenced mechanism to provide additional protection to lenders.

**7.3 Liquidity Risk:** This risk, in local environment, is considered critical to analyze. IPPs suffer due to relatively weak financial discipline of the power purchaser. Electricity distribution companies (DISCOs) are subject to higher losses (both technical and theft) and risk of non-payment by the consumers, so payments to power purchaser always made with a delay. This gives rise to circular debt as the power purchaser accordingly adjust its cash payments to IPPs. Therefore, payment to IPPs can exhibit significant volatility. Even though IPPs' funding cost in pass-through, extended delays result in IPPs having to manage their liquidity requirements either from sponsor loans, or from short-term borrowings. Thus PACRA closely monitors and obtains updated information regarding upcoming financial repayments and available resources to meet the same.

**7.4 Working Capital Financing:** Analysis of working capital financing is important part of financial risk assessment. PACRA analyses the number of days cover provided by available financing to cover its WC requirements. Any portion of working capital requirement financed through equity is considered positive. While repayment of commercial obligations as per contractual terms is considered important, availability of un-utilized lines is taken into account.

**7.5 Coverages:** PACRA assesses cashflow projections of the IPP over the tenure of the financing facility, based on the financial forecast of the project, including the assumptions underlying the forecast (e.g.; inflation, interest rates, tax rates and planned capital expenditure). Based on the financial forecasts, PACRA sensitizes the cash flow projections under several scenarios including best-case scenario on break-even basis. The sensitized cashflow projections are then matched against the debt repayment schedule of the project to ascertain the DSCR, a key indicator of the debt servicing ability of the company. The objective is to determine the DSCR or how much revenue is needed to cover debt service and operating expenses. The DSCR under each scenario and the year in which the minimum DSCR would occur are noted and explanation obtained for the trend observed. PACRA shall also compare the DSCR with the minimum DSCR as required by the financial covenant. The higher the DSCR under the various stressed scenarios, the lower the risk of financial default, hence the higher

the assigned rating. Throughout the tenure of the finance facility, PACRA determines the adequateness of DSCR.

***Force Majeure Risk:*** Where force majeure clauses are present in the PPA, PACRA looks at whether there are provisions to limit the IPP's liability in such cases. If these include payment of certain compensation, PACRA assesses the quantum of the compensation relative to the IPP's outstanding debt burden to gauge its adequacy, since this can impact the overall financial flexibility of the IPP.

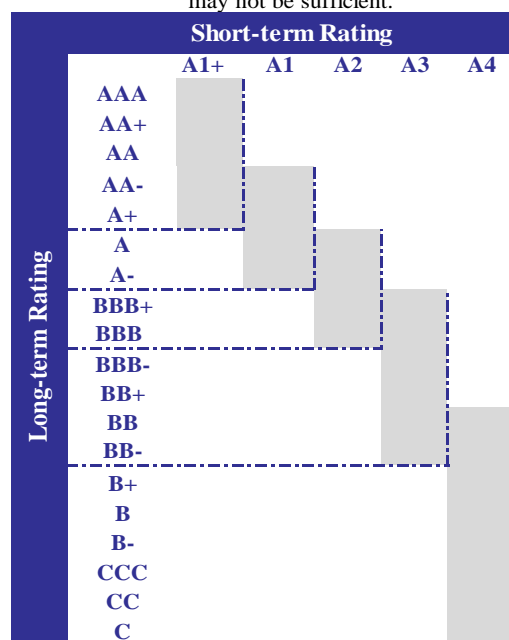
**7.6 Capital Structure:** IPPs are usually structured on an 80:20 or 75:25 debt to equity basis. The equity requirement is to ensure commitment on the part of the project's sponsors. Projects with high equity participation are viewed positively as they are likely to have greater financial flexibility.

**Credit Rating**

Credit rating reflects forward-looking opinion on credit worthiness of underlying entity or instrument; more specifically it covers relative ability to honor financial obligations. The primary factor being captured on the rating scale is relative likelihood of default.

Scale	Long-term Rating Definition
AAA	<b>Highest credit quality.</b> Lowest expectation of credit risk. Indicate exceptionally strong capacity for timely payment of financial commitments
AA+	
AA	<b>Very high credit quality.</b> Very low expectation of credit risk. Indicate very strong capacity for timely payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.
AA-	
A+	
A	<b>High credit quality.</b> Low expectation of credit risk. The capacity for timely payment of financial commitments is considered strong. This capacity may, nevertheless, be vulnerable to changes in circumstances or in economic conditions.
A-	
BBB+	
BBB	<b>Good credit quality.</b> Currently a low expectation of credit risk. The capacity for timely payment of financial commitments is considered adequate, but adverse changes in circumstances and in economic conditions are more likely to impair this capacity.
BBB-	
BB+	<b>Moderate risk.</b> Possibility of credit risk developing. There is a possibility of credit risk developing, particularly as a result of adverse economic or business changes over time; however, business or financial alternatives may be available to allow financial commitments to be met.
BB	
BB-	
B+	
B	<b>High credit risk.</b> A limited margin of safety remains against credit risk. Financial commitments are currently being met; however, capacity for continued payment is contingent upon a sustained, favorable business and economic environment.
B-	
CCC	
CC	<b>Very high credit risk.</b> Substantial credit risk “CCC” Default is a real possibility. Capacity for meeting financial commitments is solely reliant upon sustained, favorable business or economic developments. “CC” Rating indicates that default of some kind appears probable. “C” Ratings signal imminent default.
C	
D	Obligations are currently in default.

Scale	Short-term Rating Definition
A1+	The highest capacity for timely repayment.
A1	A strong capacity for timely repayment.
A2	A satisfactory capacity for timely repayment. This may be susceptible to adverse changes in business, economic, or financial conditions.
A3	An adequate capacity for timely repayment. Such capacity is susceptible to adverse changes in business, economic, or financial conditions.
A4	The capacity for timely repayment is more susceptible to adverse changes in business, economic, or financial conditions. Liquidity may not be sufficient.



\*The correlation shown is indicative and, in certain cases, may not hold.

**Outlook (Stable, Positive, Negative, Developing)** Indicates the potential and direction of a rating over the intermediate term in response to trends in economic and/or fundamental business/financial conditions. It is not necessarily a precursor to a rating change. ‘Stable’ outlook means a rating is not likely to change. ‘Positive’ means it may be raised. ‘Negative’ means it may be lowered. Where the trends have conflicting elements, the outlook may be described as ‘Developing’.

**Rating Watch** Alerts to the possibility of a rating change subsequent to, or, in anticipation of some material identifiable event with indeterminable rating implications. But it does not mean that a rating change is inevitable. A watch should be resolved within foreseeable future, but may continue if underlying circumstances are not settled. Rating watch may accompany rating outlook of the respective opinion.

**Suspension** It is not possible to update an opinion due to lack of requisite information. Opinion should be resumed in foreseeable future. However, if this does not happen within six (6) months, the rating should be considered withdrawn.

**Withdrawn** A rating is withdrawn on a) termination of rating mandate, b) the debt instrument is redeemed, c) the rating remains suspended for six months, d) the entity/issuer defaults, or/and e) PACRA finds it impractical to surveil the opinion due to lack of requisite information.

**Harmonization** A change in rating due to revision in applicable methodology or underlying scale.

**Surveillance.** Surveillance on a publicly disseminated rating opinion is carried out on an ongoing basis till it is formally suspended or withdrawn. A comprehensive surveillance of rating opinion is carried out at least once every six months. However, a rating opinion may be reviewed in the intervening period if it is necessitated by any material happening.

**Note.** This scale is applicable to the following methodology(s):

<p><b>Entities</b></p> <ul style="list-style-type: none"> <li>a) Broker Entity Rating</li> <li>b) Corporate Rating</li> <li>c) Financial Institution Rating</li> <li>d) Holding Company Rating</li> <li>e) Independent Power Producer Rating</li> <li>f) Microfinance Institution Rating</li> <li>g) Non-Banking Finance Companies (NBFCs) Rating</li> </ul>	<p><b>Instruments</b></p> <ul style="list-style-type: none"> <li>a) Basel III Compliant Debt Instrument Rating</li> <li>b) Debt Instrument Rating</li> <li>c) Sukuk Rating</li> </ul>
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