

1. INTRODUCTION

- IPPS – “enclave” projects with public-private partnership
- An evolving partnership concept

1.1 The Independent Power Producer (IPP) is an entity, which is not a public utility, but which owns facilities to generate electric power for sale to utilities and end users. Traditionally, electricity generation had remained the sole prerogative of the state regulated utilities. However, 1970 onwards, IPPs were heralded as the start of liberalization and subsequent privatization of the wholesale electricity market. Today, alongwith the developing world, major IPP programs are unfolding in the emerging economies of Asia as their economies grow and the often weak state of the public sector renders it largely incapable of delivering the energy needs associated with growth. Greenfield (new) investment– the major source of IPP expansion – accounts for 56% of the total investment in IPPs.

1.2 Most IPPs are structured as “enclave” projects,” protected from many sector risks. Their corporate structure is that of a public-private partnership. IPPs are special purpose companies (project companies) built for the express purpose of power generation, hence, their contractual framework is akin to that of project finance. Globally, about half the IPP contracts are Build-Own-Operate BOO (advantage: process integration), and the other half are Build-Operate-Transfer BOT (advantage: growth via outsourcing). However, IPPs, in their prevailing form, have failed to provide a panacea for all that they were supposed to correct. Consequently, in countries with advanced IPP experience, mainly Malaysia, new trends in Power Purchase Agreements (PPAs), also known as second and third generation PPAs, are being prompted attempting to replace the earlier stance of allocating much of the risks associated with IPP projects to the state owned utilities to a risk sharing mechanism between the two.

2. IPP INDUSTRY IN PAKISTAN

- One of the largest Asian IPP Program
- A relatively sophisticated regional regulatory framework

2.1 In Pakistan, a country where private power producers control about 30% of the total generation capacity, the electricity market was opened to IPPs in 1990. Subsequently, 15 IPPs achieved commercial operations under the first generation PPAs (those signed under Pakistan’s first power policy 1994). For several years afterwards, the IPP program remained stagnant, only to be revived as a huge power shortage hit the country in 2006-07. As a result, implementation agreements have been signed with several IPPs (both incumbents and new players) to contract about 2,500 MW of capacity, under second generation PPAs (those signed under Power Policy 2002). Out of these, a majority of IPPs have already achieved financial close. In a regional context, Pakistan offers a relatively sophisticated operational and regulatory framework for the IPPs.

3. THE RATING CRITERIA AND SCOPE

- Three areas of concentration

- 3.1** PACRA’s rating criteria for IPPs concentrates upon three main areas, namely:
- The unique contractual framework of a typical IPP in Pakistan
 - The legal aspects of the regulatory structure embodied in the project agreements governing an IPP
 - The IPP’s position in its lifecycle at the time of assigning the rating opinion

This rating methodology document is aimed to explain the process of forming a credit rating opinion with focus on thermal IPP projects only.

4. IPP RATING PROCESS

THE RATING PROCESS:

4.1 The rating process begins with the initial contact between the IPP Sponsors/Lenders and PACRA. At this point, a brief outline of the project (A Project Brief), outlining the current stage of IPP Project, is shared. For operational projects, performance results for the time since commercial operations date (COD) till to date are solicited. Based on this initial information, PACRA undertakes a brief financial analysis

and industry review.

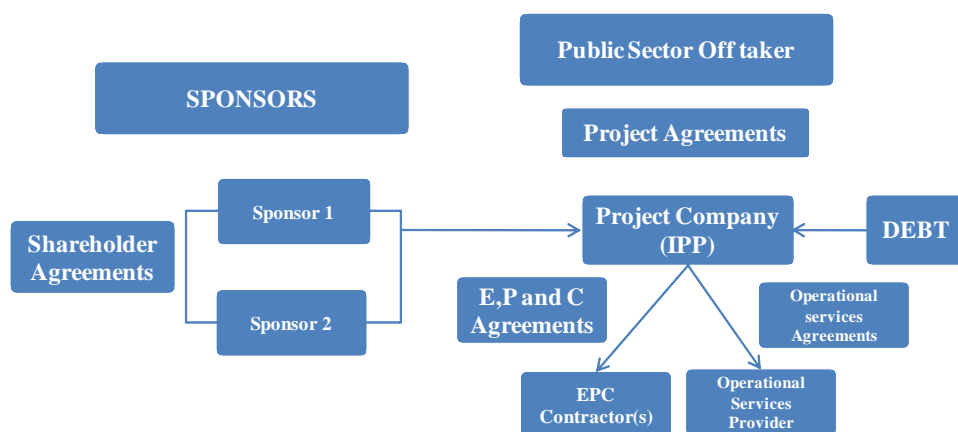
4.2 Our credit analysis for IPPs begins with a study of the contractual framework underlying the particular IPP. The objective is to determine the risks retained in the project and those that are a pass-through. This is followed by an assessment of risks, that are categorized under three broad heads:

- **Completion Risk**
- **Performance Risk**
- **Payment Risk**

The magnitude and relevance of these risks varies for IPPs at different stages in their lifecycle. A case in point is an operational IPP, for which the completion risk is irrelevant. In contrast, other things remaining the same, this IPP, had it been in its pre-COD stage, the completion risk would have been in focus.

CONTRACTUAL FRAMEWORK OF A TYPICAL IPP:

A Typical IPP Contractual Framework in Pakistan



4.3 Like most other countries, here, IPPs face a single buyer market. Water and Power Development Authority (WAPDA) is the key buyer of IPP power. IPPs negotiate a tariff (their sole source of revenue) with the regulatory authority, National Electric Power Regulatory Authority (NEPRA), under a transparent competitive bidding process. Investors are generally insulated from underlying economic risks through tightly written, long-term (spanning 25-30 years) PPAs with underlying take-or-pay contracts, supported by explicit government guarantees and credit enhancements (letters of credit, escrow accounts, liquidity facilities, tax holidays).

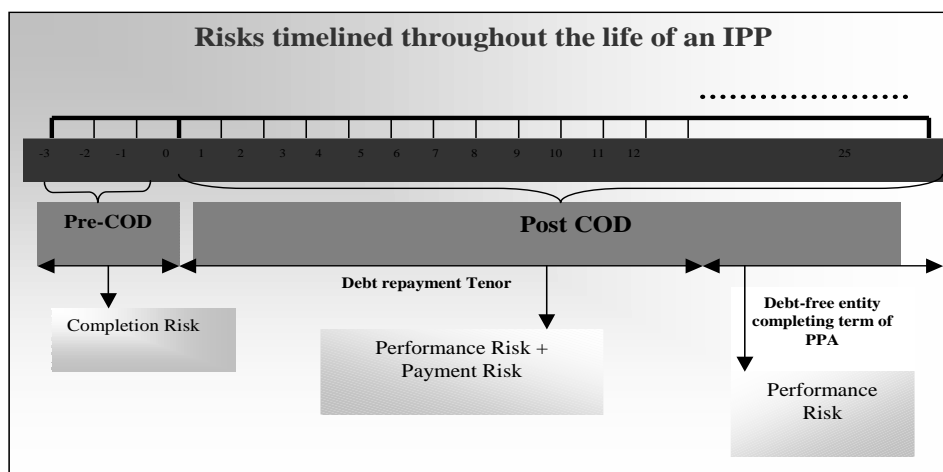
4.4 The fundamental principle underlying the contractual framework is to limit, as far as possible, the risks borne by the Project Company. A fundamental assumption is that all parties abide by the terms of their contracts.

5. RISK ANALYSIS

5.1 Risks for IPPs are generally those “internal” to the project. They can be broadly grouped into concerns over:

- **Completion Risk:** Certainty of completion (often the riskiest part of any project) may pose additional challenges in Pakistan
- **Performance risk:** Also encompassing the lenders’ ability to implement remedies for projects not performing as projected
- **Payment Risk:** The risk of failure by government bodies to deliver on their

contractual obligations



6. COMPLETION RISK

- Project Sponsors/ Management
- Principal project agreements
- Construction risk

6.1 Project Sponsors/Management: The minimum equity requirement to finance IPPs in Pakistan is 20%. Hence, the sponsors present the first source of risk for these projects. PACRA shall request for documents related to ownership structure (i.e. articles of incorporation and shareholder agreement(s) amongst equity partners), financial data and other corporate information of project sponsors. Individual wealth statements of majority shareholders may be solicited if their financial standing, as evidenced by corporate data, is unclear. Based on this information, PACRA will primarily evaluate the following factors:

6.1.1 The project sponsor’s background, track record: The project sponsor’s previous involvement with power projects that have been built and operated successfully will be evaluated. Successful experience in building and/or operating power plants would be positive rating factor. PACRA shall also carry out an assessment of the key management personnel including qualification, skills and experience. However, if the building and operations of the plant are outsourced to an expert, it could act as a mitigant, for Sponsors’ lack of experience, but depending upon the strength of the expert.

6.1.2 Financial strength: PACRA shall assess the financial strength of the sponsors. The audited accounts of the sponsors for the past three to five years will form the basis of this assessment. 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 during pre-COD and post-COD stage.

6.1.3 Commitment: PACRA shall also look 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. Examples of commitment may be in the form of undertaking to cover cost overruns, to provide liquidity support and to maintain a material interest in the project during the life of the financing facilities.

In Pakistan, majority shareholders are mandatory required to maintain a minimum shareholding of atleast 51% in the project till six years after COD. Amongst majority shareholders, the main shareholder (sponsor) – defined as one holding atleast a 20% stake - may have to maintain the said commitment throughout the tenor of the debt instrument/loan facility, if the lenders so desire.

6.2 Principal Project Agreements: All IPPs in Pakistan are governed by project agreements, (IA, PPA and FSA/GSA), that need to be carefully analyzed. The Project Agreements serve as a basis for an evaluation of:

- Regulatory risk, and
- Compensation to the IPPs if there is non-performance to any of these agreements

PACRA shall extract and examine the salient points within these agreement that would have bearing on the rating.

6.2.1 Power Purchase Agreement: Power purchase agreements (PPA) is entered into between the IPPs and the purchasing utility. Thus, the PPA is the first thing that shall be carefully reviewed. To date, in Pakistan, there are two types of PPAs, the first and the second generation PPAs. The PPAs for the first generation IPPs were signed under the 1994 power policy of Pakistan. The second generation IPPs are signed under the 2002 Power Policy of Pakistan. The majority of commissioned IPPs in Pakistan are working under the first generation PPAs. Hence, the second-generation PPAs are largely UNTESTED.

AREAS OF DEVIATION	FIRST GENERATION PPA	SECOND GENERATION PPA
Agreement period	30 years	20 years
Determination of Tariff	Cost Plus basis	International Competitive Bidding (ICB)
Currency denomination of tariff	US Dollar	Pakistan Rupee
Nature of tariff	Bulk tariff	Two part tariff through ICB
GoP exposure to exchange rate risk	Yes	No
Average Tariffs	Higher	Lower
Risk sharing	GoP Guarantee for obligations of power purchaser and fuel supplier	GoP Guarantee for obligations of power purchaser but not for fuel supplier
Performance standards for operational IPPs	Less Stringent	More stringent
Right of renegotiation	None	None

Other salient features, that require comprehensive scrutiny are:

- Insurance coverage under PPA
- What course of events will take place (specially for bondholders and lenders, if PPA is terminated prematurely)
- Performance requirements and associated penalties (liquidated damages) in the event of non-performance, also reasons for not achieving performance (examine the machinery specifications and performance parameters carefully); also, instances (from other information), where the power purchaser making despatch demands inconsistent with those performance parameters; (iv) Force Majure events and what unforeseen event is not covered under force majeure (such as terrorism in Pakistan)
- PACRA shall also look at the provision for step-in rights for either the purchasing utility, or the bondholders, in the event of default by the project sponsor/owner.

6.2.2 Implementation Agreement: This agreement takes place between the IPP and the GoP. The IA determines how the PPA is governed and includes the GoP Guarantee. In addition, any inconsistency between the PPA and IA, even seemingly slight, should

be investigated and the reasons for such be accounted for therein.

6.2.3 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 shall consider factors such as the appointed contractors, projected costs, delay risk, and other terms of the construction contract.

6.2.4 Engineering, Procurement and Construction Contract (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 to design, construct, complete and commission the power complex as well as the turnkey contract price. EPC constitutes almost 85% 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 shall ensure that the IPP is protected against any cost overrun and delay risk, as these risks have been passed to the turnkey contractor through the back-to-back liquidated ascertained damages arrangement in the turnkey contract. PACRA would evaluate that there are cash reserves and credit lines available to cover instances of cost overruns/delays.

➤ **Track Record of the EPC Contract:** The track record of the EPC contractor in both the local and the foreign market is examined. In view of Pakistan's heightened security concerns, 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.

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

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

Generally, both ESC and CSC, 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.

In Pakistan, IPPs are expected to have a reasonable assurance of a fixed price EPC Contract before applying for tariff. Owing to higher security concerns, foreign contractors may hesitate to operate in Pakistan. The presence of a well-established local office of the foreign contractor may be seen as a mitigant of the risk of the EPC contract suddenly terminating. Apart from this risk, PACRA shall examine the circumstances, which warrant the contractor to be compensated if there are additional works requested by the IPP or necessitated by the variation arising from amendments to the approved complex design.

➤ **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. Generally, in Pakistan, performance guarantees for ESC constitute around 20% of the contract value and those for CSC constitute 40% of the contract value.

➤ **Insurance policies and liquidated damages:** These need to be maintained by the EPC Contractor.

➤ **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. However,

while a fixed-price contract may protect against cost overruns, it may actually cost more in a long term, complex construction project if change orders are strictly limited. Early completion incentives are justified by the debt-servicing cushion that may accrue to the company as per its contractual obligations.

6.2.5 Independent (Lenders’) Engineer’s Report: During the construction period, PACRA shall monitor the construction progress by examining the construction progress report prepared by an engineering consultant, which is responsible for overseeing and monitoring the construction progress on behalf of the IPP and its financiers. This report becomes critical as the IPP is nearing COD.

6.2.6 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 solicits the final draft of the agreement immediately preceding the financial close (FC). Post-FC, the final PFA is reviewed. PACRA carefully studies the form of sponsor equity support alongwith loan agreements/committed bond funds, performance guarantees included in PFA.

6.2.7 Legal Counsel’s Report: While examining the PFA, PACRA looks at the Lender’s Legal Counsel Report in order to judge that proper due diligence of the Project Documents (IA, PPA, Government Guarantee, all executed contracts) and the Facility Documents (the loan agreement/facility term sheet, Intercreditor agreement, stand-by Letters of Credit, the PFA) has been conducted.

7. PERFORMANCE RISK

7.1 Performance risk is another major risk evaluated by PACRA relating to the operation and maintenance of the power plant. This risk is very critical and requires comprehensive analysis after COD. However, 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 shall assess the experience and responsibilities of the power plant operator. PACRA shall request for the relevant information which includes:

7.1.1 Operating and Maintenance (O&M) Contract: PACRA should have a clear understanding of the operator’s relationship to project owners, the scope of work, rights and responsibilities. PACRA shall look out 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.

7.1.2 Ability to Contract-Out: 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 shall expect some form of compensation to be set out in the agreement.

7.1.3 Project experience and credibility of operator with power plant operations alongwith spare parts supply: PACRA shall assess the experience and track record of the operator in operating similar power plants as well as the latest financial position of the operator. PACRA shall take note of the existence of technical support and spare parts from the major equipment suppliers at the power plant.

7.1.4 Plant’s performance: The assessment on the plant’s performance in adhering to the key performance measures such as heat rates, plant availability, dependable capacity and emissions need to be carried out. The effects on cash flow 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 shall also be looked at.

TYPE OF PLANT	PERFORMANCE
Gas fired IPPs with combined cycle technology	Enhanced plant performance and fuel efficiency
Diesel plants	More susceptible to forced outages caused by human errors compared to the gas-fired power plants
The peaking power plant¹	Lower efficiency making these plants more expensive to operate
Base Load Plant²	Base load plants are used preferentially to meet electrical demand as they have higher efficiency and are less expensive to operate

The type of power plant and the technology used in these plants to some extent influence the operating risks.

7.2 Fuel Supply Risk: Ensuring the reliability of fuel supply risk and escalation in the fuel costs is also examined. PACRA evaluates the fuel supply agreement with fuel suppliers. For gas fired projects in Pakistan, the availability of supply for the entire year should be ensured, as usually, they have a nine-months contract. Also, for these contracts (Gas Supply Agreements GSA), reservoir risk has to be taken into account. A long-term supply agreement is desirable as well as the existence of take-or-pay clause. The risk of paying for fuel not used or required should be determined from the fuel supply agreement. 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.

7.2.1 Under the second generation PPA, the GoP does not guarantee the fuel supplier’s obligations. However, the risk is a pass-through to the fuel supplier and, hence, poses no threat to the project’s cash flows, assuming the fuel supplier pays the requisite liquidated damages (LDs) to the IPP, in the event of non-performance on FSA. These LDs are subsequently passed out to the power purchaser.

7.2.2 In case of Pakistan, with PSO, the preferred fuel supplier by most IPPs, facing a liquidity crunch on account of the circular debt problem, such an occurrence may be a possibility and the degree of probability should be carefully investigated by PACRA.

8. FINANCIAL RISK

8.1 Off-Taker Risk: The off-taker for IPPs is the purchasing utility – NTDC/WAPDA/KESC. 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. As is the case of any other sovereign, GOP with its sole authority to print local currency, is not likely to default on its local currency obligations. This acts as a mitigant of off taker risk, which, otherwise happens to be in a financially distressed state. Also, globally, there is not a material instance of an event of default on local currency payments occurring for an IPP and invoking of the sovereign guarantee.

8.2 Issue Structure Analysis: Issue structure needs to be examined carefully to determine if it provides any degree of additional bondholders’ protection. Issue

¹ Peaking power plants are power plants that generally run only when there is a high demand, known as peak demand, for electricity. This usually occurs during hot weather when the air conditioning load is high.

² Base load power plants operate continuously stopping only for maintenance or unexpected outages.

structures for IPP financing in Pakistan are generally backed by exclusive charge over assets. The issue structure spells out the principal terms, conditions and covenants of the debt facility, such as repayment, 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 bond covenants that may provide additional bondholders' protection include:

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

8.2.2 An order of priority in the payment waterfall: In analyzing the cash flow projections, PACRA shall look at the order of priority within the payment waterfall, which normally provides for the payments of operating expenses, debt service and deposits to required reserve accounts before payments of any other obligations, including dividends. Another important covenant is the restriction on making dividend payments if the coverage ratio falls below a certain level.

8.2.3 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.

8.2.4 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 must 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. Normally, there is a requirement to maintain a minimum balance in the reserve account equivalent to at least half to one year of debt service (one to two installments for a bi-annual facility/loan).

8.2.5 Maximum debt to equity ratio: PACRA shall also monitor the trend in debt to equity ratio historically and that forecasted for the entire period of the facility.

8.2.6 Legal structure, credit enhancements and other financial covenants: PACRA shall also examine other features including legal structure, any measures to minimize cash leakage and tighter ring-fenced mechanism to provide additional protection to bondholders.

Also, for Issue Structure Risk Analysis Based on the debt issue structure for a power plant project, PACRA shall analyze how the issue structure addresses liquidity, refinancing and investment risks associated with the project.

8.3 Liquidity Risk: This risk is somewhat mitigated through the requirement to maintain a minimum amount equivalent to at least one upcoming installment. The risk of capital loss in respect of the investment of funds in the designated accounts is mitigated with the requirement to restrict investments to liquid assets, government-issued instruments or capital market instruments with high investment grade credit ratings with maturity dates matching the debt obligation dates.

8.4 Financial Risk (Cash flows) Analysis: For pre-operational power plant projects, the financial risk analysis focuses on the projected cash-generating ability of the project and the robustness of the cash generated under adverse scenarios to meet the debt burden. For operational power plant, besides the cashflow coverage analysis, PACRA shall also assess the profitability of the company, in particular its operating margin. The power plant requires continuous operating expenditure, given that the power plant has to adhere to certain performance standards so as not to impair its energy or electrical output as per designed capacity specified in the PPA. The main critical factors that result in poor performance usually arise from top-line items such as lower

than expected fixed capacity payment (due to penalties) and energy payment, resulting in lower than expected revenue.

8.5 Profitability/Earnings: The main profitability measures analyzed include revenue, profit before tax, profit after tax, operating profit margin, interest paid, operating profit interest (finance cost) coverage.

8.6 Cash flow Coverage: PACRA shall assess the 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 shall sensitize the cash flow projections under several scenarios including worst case and best-case scenarios. 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 shall determine the DSCR.

8.7 Capitalization/Financial Flexibility: For an IPP project, the capital structure is an important consideration. In Pakistan, 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 will enjoy greater financial flexibility, as returns on equity, such as dividend payments, can be deferred during time of stress as opposed to debt service, which follows a fixed repayment schedule. The debt to equity ratio is an important indicator of the capitalization structure to be monitored by PACRA against the maximum debt to equity ratio set out in the financial covenants.

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