

Rating Criteria for Availability-Based Projects

Sector-Specific Criteria

Application of Criteria: These criteria apply to the rating of debt issued to finance availability-based infrastructure projects. The revenue streams for such projects are underpinned by payments from a grantor, usually a public sector authority, relating to the availability of project facilities and ancillary facility management (FM) services.

This report explains how India Ratings and Research (Ind-Ra) tailors its general project finance rating approach to rate availability-based projects. It should be read in conjunction with the agency's global master criteria report, *Rating Criteria for Infrastructure and Project Finance*, dated 11 July 2012.

Long-Term Concessions: Projects covered are usually procured as long-term concessions, under which the single purpose project company (SPP) will be charged with the design, build, maintenance and operation of one or more project facilities over the concession period. In exchange, they will receive a series of periodic grantor payments.

Sectors Covered by Criteria: Typical infrastructure sectors covered by these criteria include the following. Social infrastructure and transportation comprising road, mass transit, street lighting and rail projects.

These criteria may also be partly applied in certain circumstances to energy and utilities projects, such as storage facilities, electricity transmission and water supply facilities.

Key Rating Drivers

Operating and Construction Factors: Ind-Ra has identified five key rating factors for operating projects, with one additional rating factor applying to projects in the construction phase. These are discussed at various points in the criteria report and will be highlighted using the (▲) symbol.

Revenue Risk: This is concerned with the level of project exposure to changes in inflation indices as well as the risk that the project's performance is inherent on the performance regime and exposure to any deductions.

Operation Risk: This covers the operator's performance to date and the allocation of operating and maintenance cost risk among project parties. It also covers the perceived ease-of-replacement of the operator if required and, for larger or more technically-demanding projects, the operator's experience and financial strength.

Debt Structure: This reflects the benefit provided to creditors by the covenant package, reserving provisions, hedging and other structural features.

Debt Service: This involves financial metrics, sensitivity analysis and peer group analysis.

Infrastructure/Renewal Risk: The risk covers the SPP's obligation to fund and comply with hand-back provisions, and the project's lifecycle cost provisioning profile.

Completion Risk: Analysis of this covers the experience and financial strength of the construction contractor relative to the length of the construction phase, complexity of envisaged works and the contractual support package provided. It also covers the financial strength and experience of the sponsors, particularly for more complex transportation projects.

Overview

SPP revenues in availability-based projects, often referred to as availability payments, are largely predetermined according to concession terms. They are usually a function of the extent to which the project is made available for use to the required standard and at the required times. These availability payment revenue streams are largely insulated from risks related to volume and price, and the focus of the analytical process is on the underlying concession terms and risks related to completion, performance, operation and maintenance. Some concession frameworks may include provision for demand-driven revenues. Where material to the rating, risks associated with such revenues will be evaluated under the relevant sector criteria.

Many such projects have been awarded by grantors under framework schemes and contractual forms generally referred to as Public Private Partnerships (PPP). Such contracts are referred to as “concessions” in this report.

Key features of typical availability-based cash flows include the following.

- **Stable revenue cash flows:** Availability-based projects tend to feature significantly lower revenue risk than other infrastructure projects, as they are based on predetermined tariffs paid by the project grantor for the project being made available for use and certain FM services related to the project. The credit quality of the grantor usually acts as a cap to the rating of the project
- **Unambiguous operating deductions mechanism:** Payments are usually subject to deductions, determined in accordance with clearly defined project availability and performance targets. Although the impact of deductions on project cash flows is rarely significant and generally passed on to project sub-contractors, a high degree of deduction accrual may trigger a concession termination right for the benefit of the grantor
- **Limited inflation risk:** Tariffs are typically subject to indexation, mitigating the impact of inflation on project operating costs which are also typically indexed to inflation. As such, projects are rarely significantly exposed to inflation risk
- **Low completion risk:** Social infrastructure projects tend to involve a lower degree of construction risk and operating complexity than other infrastructure projects, such as those in the energy sector, although some transportation projects may involve more complexity

As a result of these features, availability-based projects generally display more stable cash flows than others in the project finance universe. Consequently, they have historically been subjected to more aggressive financial structures, reflecting higher gearing and lower debt service coverage ratios (DSCR). As such, the margin for error in long-term revenue and cost forecasting for these projects is typically much smaller than for other project types.

Certain projects, such as those in the rail sector, may feature a higher degree of technical complexity. These projects would require a more conservative financial structure and stronger sponsors, contractors and operators to achieve the same rating level as less complex projects.

Even if a project meets the financial-metric requirements for investment grade, other factors may constrain it to a lower rating category. Factors such as weak sponsors, excessive technical risk, partial merchant exposure, sub-investment-grade counterparties or other key risk factor assessments may support a lower rating. Conversely, factors may be present that support a higher rating, such as exceptionally strong contractual protections, a benign industry environment, or market dynamics that reduce potential price or cost volatility. Projects otherwise meeting investment-grade requirements, but exhibiting DSCR coverage profiles lower than indicated for investment grade, are assessed based on the facts and circumstances particular to the project.

Limitations

The criteria do not apply to shadow toll road concessions which, while displaying a similar degree of credit exposure to project grantors as availability-based projects, have revenue streams which are largely derived as a function of the volume of traffic using the roads. See the Master Criteria for a complete discussion of limitations on methodology and ratings applicable generally in the context of infrastructure and project finance.

Related Criteria

[Rating Criteria for Infrastructure and Project Finance \(July 2012\)](#)

Figure 1
Rating Rationale for Availability-Based Projects

	Revenue risk	Operation risk	Debt structure	Debt service	Infrastructure/renewal	Completion risk
Description	Level of project exposure to changes in inflation indices. Risk inherent on the performance regime and exposure to any deductions.	Level of project exposure to longer-term operating and maintenance cost projections and ability to replace poorly performing counterparties without material deterioration in project finances.	Risk derived from debt structure, including exposure to floating interest rate, index-linked rate, maturity profile, refinance risk, structural terms/reserves.	Risk associated with leverage, on an absolute basis and as a multiple of free cash flow compared with peers and volatility of the revenue stream. May be mitigated by liquidity support provided for.	Quality of provisioning of life cycle risk allocation, impact of hand back provisions.	Risk to the SPP that the project will be completed on time and on budget and that cost/time overruns are mitigated sufficiently.
Stronger	<ul style="list-style-type: none"> Strong public sector grantor counterparty with good track record of paying on time. Contractual provisions clearly establish strong incentives for grantor performance, including full and timely compensation of debt and equity on any early termination due to grantor option or grantor default. Clearly defined, unambiguous, back-to-back penalty deduction mechanisms in the concession agreement; robust cure period. Negligible exposure to volume risk. Variable costs and related revenue are indexed with no exposure to deflation. 	<ul style="list-style-type: none"> Back-to-back pass through of all operating and maintenance expenses to contractor. High degree of visibility around cost of services verified by independent Technical Advisor (TA) and deep market of replacement contractors. Contracts subject to periodic market-testing/coterminous with debt. For more complex projects, long-term contracts coterminous with debt with investment-grade counterparties and appropriate reserving mechanisms. 	<ul style="list-style-type: none"> Fully amortising debt. Any floating rate debt is fully hedged with a highly liquid swap. Strong structural features including 12-month DSRA and robust lock-up requirements. 	<ul style="list-style-type: none"> Stable and gradually increasing DSCR profile. Ample cushion in the hand back period. DSCRs in the operational phase exceed criteria guidance, indicating that the rating could move towards that of the grantor. 	<ul style="list-style-type: none"> Five-year look forward/reserving for lifecycle costs. Good visibility on cost estimates and revenue provides adequate cushion for above inflationary growth. Hand back requirement reserving begins five to six years prior to termination of concession or is required after maturity of debt. Back-to-back pass through of all life cycle expenses to a financially strong operator. 	<ul style="list-style-type: none"> Investment-grade construction contractor. Fixed price, date certain, turnkey contract. Completion guarantee from creditworthy party. Liquidity covers liquidated damages, debt service. Ample scheduling allowance to achieve completion.
Midrange	<ul style="list-style-type: none"> Midrange public or private sector grantor counterparty. Contractual provisions include adequate provisions to encourage full performance by grantor, including terms expected to compensate debt fully following an early termination due to grantor option or default. Somewhat unclear penalty deduction mechanism or shorter cure period. Negligible exposure to volume risk. Variable costs and related revenue are indexed with limited exposure to deflation. 	<ul style="list-style-type: none"> Back-to-back pass through of most operating and maintenance expenses to contractor. Some uncertainty around cost of services and smaller pool of replacement contractors, with contracts including some renewal risk. Where operations are complex and/or replacement of contractor could be difficult, long-term contracts with sub-investment-grade counterparties backed by financial guarantees. 	<ul style="list-style-type: none"> Some exposure to refinancing risk. Limited exposure to floating interest rate. Adequate structural features including six month DSRA. 	<ul style="list-style-type: none"> Stable DSCR profile with some pinch points. Adequate cushion for hand back period requirements. DSCRs in the operational phase consistent with criteria guidance. If the operational phase meets expectations, credit quality will not likely change. 	<ul style="list-style-type: none"> Three-year look-forward/reserving for life cycle costs. Some visibility on cost estimates and revenue provides some cushion for underestimation. Hand back requirement reserving begins three to five years prior to concession termination. 	<ul style="list-style-type: none"> Experienced, possibly investment-grade, construction contractor. Contractor also owns equity in project. Strong budget/contingencies and creditworthy parent guarantees. Liquidity covers LDs and debt service. Adequate schedule for completion.

Figure 1
Rating Rationale for Availability-Based Projects (Cont.)

	Revenue risk	Operation risk	Debt structure	Debt service	Infrastructure/renewal	Completion risk
Weaker	<ul style="list-style-type: none"> • Mismatch between variable costs and related revenue. Project is exposed to revenue reductions in a deflationary scenario. • Weak grantor counterparty. • Contractual provisions, such as compensation following grantor option or default, are ambiguous or incomplete and do not support a conclusion that grantor has incentive to fully perform. • Highly open-ended penalty deduction regime or very limited cure period. SPP retains some deduction exposure. 	<ul style="list-style-type: none"> • Some operating and maintenance expenses retained by the SPP and costs are forecast dependent. More complex operations with limited pool of replacement contractors and limited or no reserving mechanisms /financial guarantees. 	<ul style="list-style-type: none"> • Material refinance risk exists. • Significant exposure to floating interest rate. • DSRA and other structural features provide limited margin of protection. 	<ul style="list-style-type: none"> • DSCR profile volatile, with limited flexibility in the hand back period. • Average DSCRs in the operational phase consistent with criteria guidance. Credit quality could be constrained by the operational phase. 	<ul style="list-style-type: none"> • No look forward/reserving for lifecycle costs. • Limited visibility on cost estimates or revenue provides no cushion for underestimation. • Hand back requirement reserving begins just prior to concession termination, triggering very tight cash flows. 	<ul style="list-style-type: none"> • Multiple weak contractors. • Inadequate budget contingencies and weak parent guarantees. • Delays quickly lead to contract termination, optimistic completion schedule. • Relatively complex construction, technology risk.
Relevant indicators	<ul style="list-style-type: none"> • Availability-based revenue as a proportion of total project revenue. • Credit rating of grantor. • Size of deductions cap. • Quality of relationship between project parties. 	<ul style="list-style-type: none"> • Operator experience. • Operation contract scope. • Ease of replacement of operators. 	<ul style="list-style-type: none"> • Reserving provisions. • Lifecycle cost schedule. • Proportion of fixed-to-floating interest rate, proportion of inflation indexation in revenue as compared to costs. 	<ul style="list-style-type: none"> • DSCR • LLCR • Shape of ratio profiles. • Debt outstanding at concession maturity. 	<ul style="list-style-type: none"> • Un-indexed life cycle costs as a proportion of construction costs. 	<ul style="list-style-type: none"> • Contractors' experience. • Guarantees. • Liquidity strength. • Schedule allowance. • Performance tests.

Note: A financially strong grantor coupled with relatively weak contractual arrangements would result in no higher than a midrange assessment of revenue risk
Source: Ind-Ra

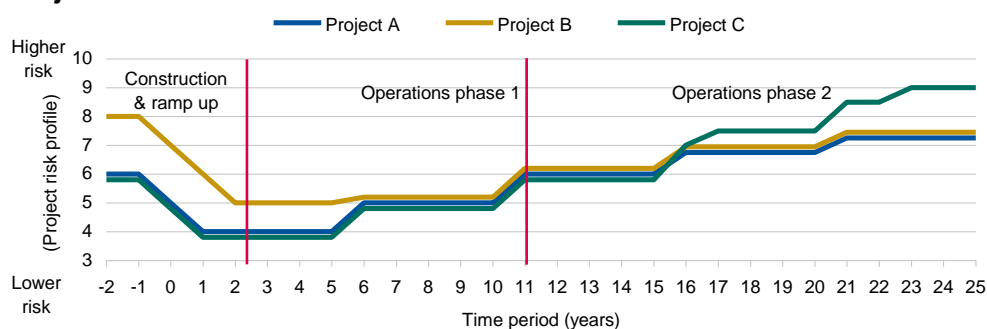
Rating Approach

Figure 2 below indicates Ind-Ra’s view of the evolving profile of three illustrative projects.

For Project A, which represents a typical availability-based project, construction and ramp up is well mitigated through a contract with a capable and credit-worthy contractor. Risk increases over time as asset maintenance becomes more significant. In Ind-Ra’s view, completion risk is not necessarily the “pinch point” in the rating of Project A. Instead, a combination of long-term cost forecasting risk, with a typically flat base case DSCR profile, places greater emphasis on the accuracy of cost provision in the latter years of the debt’s life.

Figure 2

Project Risk vs. Financial Risk Profile



Source: Fitch

Project B uses a relatively inexperienced contractor for the construction of a large and complex social infrastructure project. In this example, it is more likely that construction risk will constrain the rating.

For Project C, the risk profile increases over time due to a back-ended lifecycle profile, resulting from stringent handover provisions and a short tail period. The threat to debt service in the latter years is likely to constrain the rating.

It is possible for transactions to be rated high if they have specific strengths, both in terms of qualitative attributes and/or robust financial metrics, or lower than this if they display weaker attributes and/or credit metrics.

Investment-grade ratings are typically associated with transactions displaying predominantly stronger or midrange attributes, as described in this report, particularly for the key rating factors highlighted in Figure 1 on page 3. In addition, financial metrics would typically be within or above the ranges indicated in the *Financial Analysis — Debt Service and Counterparty Risk* section. Nevertheless, other risk factors may be identified in Ind-Ra’s analysis as constraining the rating, such as weak contractual arrangements during construction, the inexperience of the operator on a more complex project, or a grantor of weak financial standing.

Project Analysis – Structure and Information

Ownership and Sponsors (▲)

Projects supported by availability-based payments are typically smaller in scale and display a lower degree of technical complexity and cash flow volatility than most projects seen in other infrastructure sectors, such as large oil and gas projects with market risk. Therefore, it is less important for such projects to be sponsored by large companies with extensive experience and strong financial capacity. This may not apply to availability-based transportation projects, which can be large and technically complex. For these projects, the quality of the sponsor group can be an important rating factor, with midrange attributes potentially acting as a rating constraint at the investment-grade level, particularly during construction and the early ‘ramp-up’ phase of operations.

Nonetheless, availability-based contracts generally have a long duration and typically contain detailed performance tests throughout the contract life. As a result, Ind-Ra considers sponsors which demonstrate long-term commitment to, and expertise in, a particular sub-sector — ideally through the successful implementation and operation of comparable projects — as a project strength.

The relative cash flow stability of availability-based projects often attracts financial investors, sometimes investing through infrastructure funds. This is not necessarily a weakness in Ind-Ra's view, particularly when investing alongside trade sponsors, as some of these investors have significant experience of developing and investing in such projects.

For most projects covered by this report, the sponsor group is likely to have midrange attributes. Stronger attributes would be limited to those projects whose leading trade sponsor has extensive experience in the sector and strong financial capacity, and remains locked in to the project during the key risk periods through ownership covenants. This is only likely to be a key rating driver for larger transportation projects.

Jurisdiction, Structure and Legal Framework

In evaluating the legal framework governing an availability-based project, Ind-Ra focuses upon the track record of tendering and delivering availability-based projects. Frameworks that are supported by the strong, non-partisan commitment of the public sector, and which have practical evidence of the application of, for example, benchmarking and dispute resolution provisions, are viewed more positively. In contrast, ratings may be constrained for projects whose concession contracts were awarded under opaque tender arrangements, with weak political support or little legal precedent.

Use of Expert Reports

In performing its analysis of availability-based projects, Ind-Ra will examine the opinions of the technical adviser, particularly with respect to:

- how the general scope and risk profile of the project compares to its peers;
- construction costs and timescales, if relevant;
- operating and maintenance cost provisions and timing, including major maintenance costs;
- the capability of key sub-contractors, terms of key contracts and an assessment of the consequences in terms of cost and delay of replacing contractors when required;
- the reasonableness of performance tests and penalty mechanisms in the concession contract; and
- appropriate adjustments to the base case financial model

Project Analysis — Completion Risk

Completion risk is an important risk factor for project debt to be rated during a construction phase.

In Ind-Ra's experience, the level of completion risk associated with availability-based infrastructure projects is generally at the lower end of the range for infrastructure projects overall and would normally result in stronger completion risk attributes. This is because the construction of these projects predominantly involves little more than basic civil engineering. Nonetheless, the expansion of an existing site can present more challenges than a greenfield project, due to the logistical complexity associated with performing construction works in an operating environment.

The construction of road and rail projects may cover significant distances over varying terrain and may involve the installation of signalling and other control and safety equipment, as well as the construction of more complex structures, such as bridges and/or tunnels. The higher degree of complexity pertaining to these projects may result in midrange or weaker attributes.

Technology Risk

For accommodation projects, technology risk would usually more appropriately be termed “design, interface and scheduling risk”, and there is limited exposure to higher risk technological equipment or processes. For these projects, stronger attributes would normally apply. Projects whose construction involves the use of specialised equipment, such as tunnel boring machines, would justify midrange attributes.

Contractors (▲)

Ind-Ra focuses upon the experience, resources and financial capacity of a project’s key construction contractors in relation to its relative scale, technical complexity and timetable. For this reason, the agency would generally apply less stringent tests when analysing contractors in availability-based social infrastructure projects, compared to other types of availability-based infrastructure.

It may not be necessary for the main construction contractor to be of investment-grade credit quality to support an investment-grade senior debt rating for a relatively straightforward project. This may be the case providing the contractor has a demonstrable track record in completing similar projects on time, on budget and to the required standard, and as long as third-party performance bonding provisions are sufficient to cover likely cost increases, should the contractor need to be replaced. Construction contractors in smaller accommodation-based infrastructure projects are often small, local or regional building firms, and a weaker attribute assessment here may not preclude an investment-grade rating for such projects, if the agency concludes it would be relatively easy to replace such contractors if they became unable to fulfil their contractual obligations.

For more complex or larger scale projects, however, the financial strength of the contractor may be a constraining factor on the credit rating, even if it has the appropriate experience to complete the project. In such cases, a midrange or stronger contractor, with adequate performance bonding or other support, would be necessary to avoid constraining the rating.

Cost Structure/Delay Risk/Contract Terms

Figure 3

Typical Construction Contract Terms for an Investment Grade Rating

- | | |
|----------------|--|
| Contract terms | <ul style="list-style-type: none"> • Fixed price; date certain; turnkey • Delay liquidated damages: Pass through to contractor of losses incurred by SPP company due to delay • Appropriate performance and retention bonding or other liquidity • Appropriate level of contingency built into cost budget and financing plan • Defects liability continuing for sufficient period, including latent defects liability • Reasonable aggregate liability cap (excluding wilful default) |
|----------------|--|

Percentage values for retention, performance bonding and liquidated damages can vary significantly across transactions and will be informed by technical analysis and the financial strength of the contractor. Ind-Ra takes into account the existence of guarantees from the contractor’s parent company when assessing the financial strength of the contractor.

For more complex projects (roads, rail portfolios), a weaker contractor (speculative-grade credit quality or less experienced) is likely to constrain the rating to below investment grade, unless compensated for by significant additional performance bonding.

Source: Ind-Ra

Scheduling and cost risk is influenced by a variety of factors including the project’s sector, whether the project involves the development of a greenfield site or the upgrade of existing infrastructure, whether it pertains to a single or multiple sites and by the aggressiveness of the construction timetable. Please see Ind-Ra’s report *Rating Criteria for Infrastructure and Project Finance*, dated 11 July 2012, for a detailed assessment of the construction contract terms associated with stronger, midrange and weaker attributes.

Project Analysis — Operation Risk

- The scope and complexity of the SPP's operating responsibilities in an availability-based infrastructure project will vary according to the specific sector, but may include a combination of the following features. The provision of day-to-day services to the users of the project, such as catering, cleaning and security, often referred to as "soft facilities management" (soft FM). Regular day-to-day maintenance of the project infrastructure, often referred to in accommodation projects as "hard facilities management" (hard FM)
- Major repairs to the fabric or critical systems of the project infrastructure, sometimes referred to as "life cycle" maintenance. During operations, the precise determination as to whether certain items constitute regular- or major-maintenance, and consequently which party takes the risk related to them, can be open to interpretation, although any such ambiguity tends to relate to relatively minor items

Note that soft FM services are relevant only for accommodation projects and do not feature in transportation projects. For social infrastructure projects, Ind-Ra regards projects with very limited soft FM scope as marginally stronger than full scope projects, given their reduced potential for incurring performance deductions.

Technology Risk

Availability-based projects do not typically involve machinery operating in extreme environments and requiring constant monitoring, regular maintenance and inspection, such as would be the case in a power plant. Rather, accommodation projects can generally be characterised as requiring ongoing logistical and maintenance challenges. Nonetheless, availability-based projects still encompass a broad range of technical complexity in operations. Typically, the provision of equipment (e.g. computers) would not form part of the concession agreement.

Technical risk can be seen as a function of operating complexity and scale, where:

- Operating Complexity
 - Transportation projects may involve the maintenance of infrastructure over a large area, including bridges, signalling and tunnels or managed lanes projects, and are usually more operationally complex than accommodation projects. This is especially true of high speed rail
- Scale
 - Ind-Ra regards larger and multi-site projects as likely to present more technical risk than smaller or single site projects. Firstly, this is due to the increased logistical challenges of larger projects, such as the co-ordination of maintenance services. Secondly, large-scale projects can have a wider scope Ind-Ra will review opinions from the technical adviser as to any aspects of the design, materials or maintenance plan for the project's facilities that are not commonly applied in comparable projects; the agency will consider these on a case-by-case basis

Operator (▲)

Investment-grade ratings are typically associated with projects where the SPP's operating responsibilities are passed down in full to an operator that has a proven track record in successfully delivering similar services to comparable projects, and also has sufficient financial capacity to absorb contractual liabilities.

Depending on the scale and complexity of the operating responsibilities, it may not be necessary for the operator itself to be of investment-grade credit quality for the project's debt to be rated investment grade, and operators with midrange attributes may be adequate to support investment-grade ratings of project debt. Indeed, this is often the case in social infrastructure projects. In its analysis, Ind-Ra will consider to what extent the operating service can be provided by a selection of replacement operators and what the cost implications of such replacement might be. Commentary from the technical adviser as to the availability of suitably qualified replacement operators will be an important consideration here.

In more complex and larger scale projects, such as, roads or rail, or projects where the ability to replace the operator at minimal additional cost is uncertain, Ind-Ra will analyse the credit standing of the operator or, if appropriate, its parent company. For such projects, a speculative-grade rating of the operator may act to cap the project's debt rating at that level, barring additional third-party support (such as letters of credit (LOC) or bonding that covers the cost of potential replacement). Such projects would also be expected to have lower leverage and higher debt service coverage ratios than simpler social infrastructure projects.

Ind-Ra notes that the operating contract does not always extend for the full duration of the concession. Whilst this situation is less advantageous to the project than a full-term contract, it is more likely to be a material rating consideration in the following circumstances:

- the operator is considered highly capable and is of investment-grade credit quality, such that it may be difficult to find a replacement of similar quality for the remaining concession term;
- the services provided for under the contract are somewhat specialised, implying that it may be difficult to replace the operator at similar cost;
- the concession does not include market testing or benchmarking provisions for operating costs;
- reliable long-term operating cost benchmarks for the relevant sector are not available; and
- no other contractual or structural protections, such as liquidity support from the sponsors or the existing operator, exist

Unless it is supported by a LOC or performance bond, Ind-Ra will not generally attribute value to any contractual liability of the operator to the SPP that may theoretically be available upon operator default. This is due to the difficulty in estimating the timeframe in which recoveries could be made. Nonetheless, provision for such payments is important to provide proper alignment of interests between the parties.

Costs (▲)

The typically long duration of concession contracts in availability-based projects, combined with relatively high gearing and thin cover ratios, means that often the most significant operating risk is the accuracy of long-term operating and maintenance cost assumptions. A weaker attribute assessment would be associated with less experienced operators and a cost profile at the lower end of the peer group range. A midrange assessment would generally be assigned to projects with regular and major maintenance costs, allocated in the first instance to an experienced operator, with major maintenance cost budgeting in line with, or higher than, its peers. A stronger assessment would relate to projects whose operator's financial strength was high, relative to its obligations to the project. Where Ind-Ra views the contract as priced considerably off-market, it would view the contract as being more likely to be disputed in the long term. In such cases, a midrange or weaker attribute would be appropriate.

In making these assessments, Ind-Ra considers the following issues carefully.

- Which project party the regular and major maintenance costs are allocated to. Usually, regular maintenance cost risk is borne by the operator, but the allocation of major maintenance risk varies
- The opinion of the technical adviser as to the adequacy of the budgeted cost profile
- The reputation of the operator and its track record in designing reliable cost programmes. In the agency's experience, major construction firms are more technically able to assess major maintenance costs for facilities they have designed and constructed themselves. Since major maintenance costs are a direct function of choices made during construction design, relating to materials, construction techniques etc., Ind-Ra sees the involvement of a reputable construction company as operator as a credit positive

- Where possible, Ind-Ra will also compare cost projections with comparable projects to check whether a project has a more or less conservative cost profile than its peers (see Peer Analysis section). This usually takes the form of metrics such as:
 - un-indexed major maintenance costs as a percentage of construction cost; or
 - operating and maintenance costs compared to the scale of the project (eg per mile of track or per train)

In conducting such analysis, Ind-Ra is aware of possible anomalies with individual projects: it would, for example, take into account the fact that higher construction costs may be accounted for by a specific design feature, or the selection of more costly materials or systems. This would in turn, generate savings on maintenance costs going forward, and in such cases, lower maintenance costs as a percentage of construction may be justified.

- The structure of any maintenance reserving mechanism (*MRM* — see *Structural Features* section)
- A comparison of the project's major maintenance cost profile with similar projects, and as commented upon by the TA: a significantly back-ended profile would put greater reliance on the MRM and increase Ind-Ra's perception of handover risk during the concession tail. High inflation, could amplify this scenario

Ind-Ra notes the existence of periodic benchmarking and market-testing mechanisms in some availability-based projects, whereby soft or hard FM costs are compared to those in similar projects or put out to tender. In either case, should the cost of the tested project service be outside the specified tolerance range around the established market rate, the service price would be reset and the resulting cost reduction or increase passed through to the grantor.

Ind-Ra regards such mechanisms as a credit benefit, in that they mitigate the risks associated with long-term cost projections. Market testing should include a transparent and competitive bidding process to be effective, in which bidders believe they have a genuine chance of winning the contract, rather than merely validating the price of the incumbent operator.

When considering availability-based toll roads projects, it is also important that the project has protection against cost increases resulting from an increase in traffic volume; it could otherwise be faced with higher infrastructure maintenance costs and/or lower available service quality.

Ind-Ra would consider as a credit negative a lack of clarity in the documentation — with regard to the process of allocating responsibilities for any causes of delay — and irregular timetables .

Tail Risk

Availability-based projects typically require that the project's assets are handed over to the grantor at the end of the concession in a condition suitable for continued operation. In addition, the debt secured on such projects is often scheduled to fully amortise between six and 18 months before the concession maturity, thus allowing for a relatively short debt-free tail in which to refurbish the assets if necessary. In any case, the project does not have the option of continuing to operate the assets following the expiry of the concession contract.

Ind-Ra will consider to what extent the maintenance budget and timetable is sufficient to allow handover conditions to be met, and will evaluate the technical advisor's assessment, adjusting its analysis as necessary. In particular, Ind-Ra will examine the profile of major maintenance. For projects where there is a high level of major maintenance forecast for the final years of the concession and close to debt maturity, Ind-Ra will place greater emphasis on the robustness of the MRM (see below).

Risk Factor Assessment Revenue (▲)

Availability-based projects typically have stronger attributes in this category, unless the project is experiencing material deductions.

Project Analysis — Revenue Risk

Gross Revenue/Off-Take (▲)

Unlike other infrastructure sectors, availability-based project revenue is not materially exposed to volume or price risk.

Price Risk

Baseline gross revenue, subject to indexation throughout the concession life, is fixed prior to the start of the project. Ind-Ra will consider to what extent this indexation offsets corresponding indexation of operating costs, and whether there is any residual exposure to inflation. Although far less common, Ind-Ra will also assess the project's exposure to risk introduced through the use of different indices, used to escalate revenue and cost streams respectively (basis risk). Please see *Additional Stresses* section.

The project's revenue stream can also be affected by benchmarking or market testing provisions in the concession contract. However, any changes would be matched by back-to-back changes to its operating costs and hence leave the project neutral from a cash flow perspective (see *Costs* section).

Performance Risk

Availability-based project revenue risk is closely linked to operating risk, since concession contracts specify, often in significant detail, the standard to which these responsibilities are to be performed throughout the concession grace periods and the penalties that the SPP would incur if it fails to meet them.

Penalties are generally split between those incurred for specific performance failures that do not affect overall project operation, and those incurred when all or part of the project facilities are not available for use at the required times and to the required standards. In general, transportation projects only tend to include penalties resulting from non-availability; as such, railway track or road availability is the key revenue driver. Both types of penalty reduce SPP revenue, with penalties relating to project unavailability generally being the more severe.

In most cases, the SPP should be able to pass the effect of deductions on to the operator, as the operating contract will typically include near-identical deduction mechanisms (although often subject to an annual cap). This would be reflective of a stronger attribute assessment, on the basis of the strong alignment of interest between the SPP and the operator. However, failure of the SPP to meet these performance standards may entitle the grantor to terminate the concession.

Ind-Ra will evaluate the performance standards, as well as the manner in which penalties incurred for repeat failures increase in magnitude over time, as set out in the concession contract. It will also take into account the technical advisor's view of such mechanisms, as regards whether they are reasonable, achievable and consistent with those of comparable projects.

Ind-Ra would generally regard material deductions as suggestive of operating problems. In a scenario in which the agency considers a project to be experiencing a material level of deductions, it would seek to understand how such a situation could be rectified. It would also look for any evidence of a deteriorating relationship between the SPP and the grantor which, if actually the case, could indicate a more fundamental threat to the ongoing viability of the project.

Ind-Ra has seen few examples of projects incurring material performance penalties. It is not clear whether this is because operators have generally performed well so far, because performance tests have been set too leniently, or because grantors have not implemented performance regimes strictly. Therefore, Ind-Ra believes there to be a structural risk in these transactions, ie the public sector may choose to implement performance tests more rigorously,

particularly in the context of tighter government budgets. However, this risk should be mitigated by detailed performance provisions in the contracts and by the ability of disputes to be referred to independent arbitration.

Furthermore, Ind-Ra notes that the operational performance of an availability-based project is reasonably transparent due to detailed, granular and often daily performance testing. In contrast, poor operating performance of an energy project, for example, may not be apparent until it leads to a major outage, when the financial implications could be severe.

For availability-based transportation projects, the public authority retains all control over capacity allocation. Although these schemes appear less risky than those involving traffic risk, availability-based projects remain exposed to events such as strikes, flooding, contamination, disruption of power supply, soil settlement or soil movement beyond specified tolerances, which may trigger under-performance and, in turn, application of penalties. The definitions of performance in terms of speed, safety, comfort, response time in failure etc, and of non-attributable events for which the project will not be held accountable and therefore penalised — such as extraordinary weather conditions — are thus critical and generally more difficult to determine than in social infrastructure.

Ind-Ra considers the inclusion of a detailed and non-subjective set of acceptance tests in the concession contract as a credit positive.

Revenue Risk — Hybrid Transactions

Some projects derive a portion of their revenue from sources other than the main concession contract. This un-contracted revenue tends to be most significant for rail projects, where it can relate to the sale of non-contracted network capacity to third-party train operating companies (TOCs) whose payments are not guaranteed by the grantor, or to some proportion of ticket sales. When analysing such projects, Ind-Ra will generally adapt its availability-based infrastructure rating criteria to accommodate the project's exposure to volume and/or price risk in its revenue stream by applying the relevant sector criteria or the master criteria.

Typically, such projects would likely have midrange attributes for revenue risk, although stronger attributes may be possible for core rail infrastructure projects, where evidence of demand for use of the network from third-party TOCs is readily available. Such projects may derive up to 50% of aggregate revenue from such sources.

Some light rail projects have exposure to non-availability revenues in the form of ticket sales, which can make up around 30% of revenue. In these cases, Ind-Ra would again adapt its availability-based infrastructure rating criteria to accommodate the hybrid nature of the revenue stream. Such projects are likely to have midrange attributes for revenue risk and require higher cash flow coverage in order to achieve the same rating as a project with 100% availability-based revenues. In addition, the peer group used for such rating analysis would include a combination of availability-based projects and those with significant market risk.

As long as the agency considers these revenues to be underpinned by solid fundamentals — to the extent that debt service is materially supported by them — then it would not penalise the project debt's rating. Rail projects may also derive a small part of their revenue from similar sources at train stations.

Termination Event Risk (Pre-Maturity)

Termination, whether due to grantor default, force majeure or a grantor exercising an option to terminate for convenience, should typically trigger compensation from the grantor for at least the full amount of the rated debt. The timing and mechanisms for receipt by the SPP of these payments are reviewed by Ind-Ra, and should allow for timely repayment of the debt, consistent with its rating.

Risk Factor Assessment Termination Event Risk (▲)

A midrange attribute is associated with tighter performance parameters in the operating contract than in the concession contract. A stronger attribute may relate to projects with very few termination events (or for transactions where the compensation mechanism guarantees 100% debt repayment in the case of an SPP default, and there exists sufficient liquidity to continue to service debt.

Ind-Ra is generally more focused on the risk of concession termination due to a performance default by the SPP; this is particularly important for availability-based projects, given that the concession contract is usually the project's only source of revenue and, following termination, the project's assets are generally transferred back to the grantor.

A typical midrange attribute for availability-based projects would feature performance thresholds for penalties and termination that are more stringent in the operating contract than in the concession agreement, thereby allowing the project to replace the operator before concession termination is an option for the grantor. In particular, Ind-Ra would expect to conclude that the likelihood of termination due to SPP performance failure is remote, in order for a project to attain an investment-grade rating.

A stronger attribute for availability-based projects would reflect a concession contract containing very few termination provisions, ensuring that any such project is notably less exposed to the risk of contract termination than others.

Ind-Ra's infrastructure ratings are its opinion of the probability of default of the rated debt instrument, and address the timely payment of interest and principal according to the loan or bond documentation. As such, ratings do not take into account recoveries post-default, while compensation mechanisms only influence the rating to the extent that the project is supported by sufficient liquidity features — such as cash, reserve accounts, bank liquidity facilities or the structural deferability of interest and principal — to allow it to avoid a payment default prior to the scheduled receipt of a compensation payment. Furthermore, compensation would need to be sufficient to allow for the repayment of 100% of principal, accrued interest and costs. Clarity with respect to the timing of compensation payments in the concession agreement, or the existence of precedents, would be important for this analysis.

Financial Analysis — Debt Structure

Typical features of most availability-based project financings include: a high level of leverage, with significantly large percentage of project costs usually funded by senior debt and relatively thin coverage ratios for most investment-grade projects, with tail periods often as short as 6-18 months between debt maturity and the end of the concession. While project-related risks for these credits may generally be characterised as at the lower end of the infrastructure spectrum, and although financial structural features may be typical for project finance, they often display aggressive financial metrics, which Ind-Ra considers as offsetting many of these strengths.

Debt Characteristics and Terms

Debt amortisation profiles for these projects tend to be highly 'sculpted'. They often fluctuate to accommodate undulations in the project's forecasted major maintenance and tax cost profile, in order to achieve a flat DSCR profile in the sponsor's base case. In Ind-Ra's view, however, this has the consequence of making project cash flows highly sensitive to relatively small movements in cost levels or timing. This is considered further in the *Financial Analysis — Debt Service and Counterparty Risk section*.

Structural Features (▲)

A maintenance cost reserve structure is important to smooth cash flows resulting from changes to the timing of major maintenance costs; such reserve also provides debt holders with some visibility on near-term operating costs budgets and limits distributions to sponsors. However, such features do not themselves protect the project from the risk that the original major maintenance cost assumptions made at financial close are too low. In such a situation, and regardless of reserving structure, there would be an impairment of the project's long-term cash flows.

To be effective, such mechanisms need to be supported by a transparent and regular process for revising major maintenance cost forecasts, and incorporating corresponding revisions into the required reserve balance.

Risk Factor Assessment Structural Features (▲)

A midrange attribute is associated with maintenance reserve accounts based on a three-year dynamic mechanism, with annual review by an independent technical adviser and six months debt service reserve account (DSRA).

Ind-Ra observes that in projects where the major maintenance risk is borne by the operator, the maintenance reserve at the SPP level tends to be correspondingly weaker than if the SPP were undertaking the major maintenance cost risk (usually one-year mechanisms versus two- to three-year mechanisms respectively). In this case, to justify a stronger attribute, the transaction would typically need to contain provisions for the MRM to revert to a two- or three-year mechanism, should the operator's financial profile weaken or should the major maintenance cost profile increase materially.

Given the generally tight levels of debt service coverage in availability-based projects and the potential for maintenance cost timing shocks, Ind-Ra regards a debt service reserve account (DSRA), sized to cover the next six months of interest and principal on an ongoing basis, as an important structural feature, and consistent with a midrange attribute. Ind-Ra notes that in some cases, projects benefit from 12-month DSRA's, which would correspond to a stronger attribute.

Financial Analysis — Debt Service and Counterparty Risk

Model

Most availability-based projects in Ind-Ra's portfolio display relatively thin base case interest coverage. This, combined with the common practice of borrowers to sculpt principal repayments so as to achieve flat base case DSCR profiles, brings the accuracy of the borrower's modelling assumptions into sharp focus. It is not uncommon for the agency to observe actual DSCRs that vary somewhat from base case expectations. Common explanations for this include the timing of revenue receipts during the early stages of operation and corresponding movements in working capital, or differences between actual periodic major maintenance spending and what had been budgeted.

Given the inherent forecasting errors in these assumptions, Ind-Ra generally adopts the following principles in its analytical approach.

- Financial metrics are only one part of Ind-Ra's analysis
- DSCR or loan life cover ratio (LLCR) metrics are assessed
- Given forecasting risk and the likelihood that a project's cost budget will change regularly over time, both in terms of amounts and profile, Ind-Ra generally considers average, rather than minimum, financial metrics. The minimum is also tested, but is less likely to drive the rating analysis unless there are extended periods of low coverage. This is because the agency assumes that the SPP will have some flexibility to adjust near-term maintenance costs if cash flow becomes tight

Ind-Ra's Rating Case (▲)

Given the inherent revenue stability in availability-based transactions, Ind-Ra's rating case is likely to be much closer to the sponsor's base case assumptions than would typically be the case for other infrastructure sectors. In developing its rating case, Ind-Ra considers a combination of variables, including:

- operating and maintenance costs and timing;
- SPP costs (eg insurance, premises and overheads);
- availability and performance deductions; and
- interest and inflation rate stresses, should these risks be largely unhedged.

Ind-Ra may make adjustments to cost, timing or performance assumptions if they: appear to be outside the range seen for similar projects; are inconsistent with actual results for the rated transaction; or based on the opinion of the independent technical adviser.

In analysing the transaction's financial metrics, Ind-Ra assumes no benefit from the pass-through of performance penalties or cost increases to the operator, or benchmarking. Instead, it focuses on the ability of the SPP to bear these risks itself. Ind-Ra will also consider the minimum DSCR throughout the life of the financing to assess sensitivity to timing mismatches. As stated above, financial metrics are only one part of Ind-Ra's analysis.

Additional Stresses (▲)

In addition to its rating case analysis, Ind-Ra tests the sensitivity of the project's cash flows to changes in key assumptions.

- **Inflation:** Ind-Ra tests the net exposure of the project's cash flow to any mismatches in inflation indexation between the project's revenue and cost streams. In examining this risk, the agency takes into account inflation hedging that may form part of the financial structure
- **Interest rates:** Ind-Ra adjusts interest rate assumptions in the financial model throughout the life of the debt to evaluate the effectiveness of any interest rate hedging arrangements in place
- **Maintenance costs:** Ind-Ra assesses how much of an increase in regular and major maintenance costs the project can tolerate before the minimum DSCR falls to 1.00x — i.e. the breakeven cost increase — and also the project's susceptibility to changes in timing of these costs

Project Counterparty Risks

A key factor in the analysis of an availability-based project, dependent on payment streams from its grantor, is the nature of the public sector grantor of the concession contract. This applies both to the terms of its statutory powers to grant the concession and its financial capacity to honour its contractual commitments. The assessment of the grantor's financial strength is particularly important, given the pressure on public sector budgets currently being experienced.

The statutory organisation and powers of the grantor may vary from sector-to-sector. Ind-Ra will examine carefully the precise nature of the grantor's relationship with the host government on a project-specific basis.

In evaluating the financial capacity of the grantor, Ind-Ra makes use of its public ratings or, if these are not available, relies on internal expertise in the sector to assess this risk factor. For the avoidance of doubt, Ind-Ra does not automatically assume that the project counterparty rating would be the same as the senior debt rating (if available) of the grantor, as it may be that its payment obligations under the concession contract rank subordinate to debt and other senior obligations.

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