BOT Toll Road Projects in India
ICRA Rating Methodology

Overview
Over the last ten years, a large number of road projects have been awarded through Public Private Partnership (PPP) mode under Built-Operate-Transfer (BOT) model. Under the BOT model, road projects are awarded on BOT-Toll or BOT-Annuity basis\(^1\). This note provides an overview of ICRA’s methodology for rating BOT-Toll road projects. These projects are implemented through project specific Special Purpose Vehicles (SPVs), in which the debt is raised to fund part of the project cost. The main source of revenues for these SPVs is the toll revenue, which is used to meet the contractual obligations including operational and maintenance expenses, payments to NHAI (in case of negative grant/revenue share) and servicing debt obligations.

Key risk factors and rating considerations for BOT projects
BOT toll road projects are exposed to execution risks (delays in securing right of way, clearances, issues with EPC contractor, etc), funding risks if the debt and equity are not fully tied-up, interest rate risks, operation & maintenance risks and most importantly traffic risks (as toll collections is the main source of revenues). For an under-construction road project, implementation and funding risks are prominent and can lead to cost and time overruns as well as loss of toll revenues in case of delayed project completion. Besides these, an under-construction road project’s rating is also dependent on the sponsor and construction contractor’s financial strength and execution track record.

Toll road projects undergo significant change in their risk profile once they achieve COD (Commercial Operations Date). While permitting and execution risks dominate the pre-COD period, the primary risk in the post-COD period pertains to the tollable traffic on the project road, and the commuters’ willingness to pay the toll. For a project with toll collection track record of 1-2 years, the assumptions of tollable traffic are relatively more reliable as compared to a project for which toll collections haven’t started and there is no history of toll collection on the stretch. In the later case, assumptions for toll collections are generally based on traffic studies and remain a key rating sensitivity.

A toll road project’s rating may see a significant change post COD as the project implementation risks gets over and with the commencement of toll collection and establishment of some track record of tollable traffic on the project stretch, the uncertainty associated with project’s toll collections are reduced which is factored in the ratings.

\(^1\) In case of BOT-Toll model, fees is charged from vehicles using project stretch while in case of BOT-Annuity model a fixed amount is paid at regular frequency (generally semi-annual) by the project owner to the SPV
**ICRA's Risk Analysis Framework for Toll Road Projects**

From a credit perspective, many of the challenges involved in developing road projects are similar to those faced by other infrastructure projects. The key ones being execution challenges like acquisition of land, securing necessary clearances, financial closure, and revenue risks. The issues, which assume special importance, in the case of BOT road projects include risks associated with acquisition of long segments of right of way. Although acquisition of right of way (RoW) is the responsibility of the project owner (generally NHAI or state road development entity), delays in timely handing over of required right of way post the start of construction can result in time and cost overruns in project implementation. The other key differentiating factor with respect to toll road projects is the market risk arising out of difficulties in correctly forecasting long-term traffic volumes and their sensitivity to toll rates.

**Contractual agreements:** The key stakeholders and typical contractual structure for a toll road project can be diagrammatically represented as in the Exhibit 1 below:

![Exhibit 1: Key stakeholders and typical contractual structure for a toll road project](image)

The concession agreement between the project owner and the concessionaire defines the framework within which such projects operate. Such projects are usually implemented through special purpose vehicles (SPVs), which enable legal separation of the credit risk profile of the projects from that of their sponsors. The concession period for such projects usually ranges between 15 and 30 years, dependent on the projected toll collections along the stretch.

The contractual structure broadly defines the allocation of risks; while construction, operation and market risks are absorbed by the concessionaire, the political and permitting risks are generally assumed by the project owner. Some of the salient features of a typical NHAI concession agreement (CA) for a toll road project are summarized in Exhibit 2.
Exhibit 2: Salient features of a typical NHAI concession agreement for a toll road project

- The CA entitles the concessionaire to design, engineer, finance, construct, operate and maintain the project facility during the concession period as well as to levy and collect toll fees from vehicles for using the project or any part thereof.
- The CA usually stipulates that the tolls would be levied at rates notified by a government agency and also defines the rates for annual escalation in toll rates. The government can also propose exemptions or subsidies for certain vehicle categories. While the traffic risks are to be largely borne by the concessionaire, some concession agreements make it obligatory for the government to direct vehicle movement in a particular manner or prevent the construction of alternative roads, which to an extent reduces the traffic risks.
- In most cases, the political risks are assumed by the project owner. Further, some of the concession agreements also have provisions whereby the project owner undertakes to indemnify the project company from a shortfall in toll collections due to a political force majeure, through an advance/revenue shortfall loans.
- The concession agreement usually allocates the risks associated with securing various regulatory approvals, and acquisition of land to the project owner. Most concession agreements provide for an independent consultant or supervisor to monitor the progress and the quality of construction during the project period.
- It also provides for the appointment of an O&M contractor to operate and maintain the highway during the concession period with ‘events of default’ being clearly specified. Some agreements also attempt to ensure the availability of adequate funds for maintenance through the creation of a ‘reserve fund’.
- Force majeure clauses are an integral part of any concession agreement with the types of such force majeure and the consequent sharing of such risks among the government, sponsors and the lenders being clearly defined.

ICRA examines the scenarios (events of default) under which suspension of the rights of the concessionaire or termination of the agreement can take place. Besides the adequacy of the termination benefits receivable by the concessionaire in relation to its debt servicing obligations in the event of a termination, the ability and track record of the concerned government agencies to meet their obligations is also assessed. The contractual structure usually provides for a substitution agreement, which entitles the lenders to replace the concessionaire in the event of a default and also use the termination proceeds for prepaying the outstanding project debt, though in some cases termination payment may not be sufficient to cover the entire debt outstanding and is a concern from credit perspective.

Apart from a detailed study of the contractual structure, ICRA also assesses toll road projects on the following parameters:
- Sponsor Risks
- Completion Risks
- Funding and Financial Risks
- Market Risks
- Operating Risks
- Structure Risks

Sponsor Risks
Despite the non-recourse nature of the SPV, the financial strength of the sponsor is a key credit determinant given that apart from contributing promoter’s share in the form of equity capital and/or subordinated debt, the sponsor is also directly or indirectly responsible for ensuring financial closure of these projects. Further, during the pre-COD stage, most of the toll projects involve recourse to the sponsor for debt servicing as termination payments from the project owner are not available during this period. Post the project completion, while many SPVs enter into operations and maintenance (O&M) contracts with the sponsors, the financial linkage is relatively lower during the post-COD period. Nevertheless, presence of financially strong sponsor(s) lends some comfort, basing on their ability to provide support to the SPV in case of any contingency or short-term cashflow mismatches.
Execution Risks
A key component of the completion risk is the permitting risk which refers to a project’s ability to acquire all statutory clearances prior to the commencement of construction activity. Typically, for a road project this would include right-of-way acquisition, rehabilitation and resettlement, clearances from the Ministry of Environment and Forest (MoEF), Pollution Control Board and Railways, and clearances for shifting all utilities that lie in project area. As has been discussed earlier, the project owner usually assumes the permitting risk and also undertakes to indemnify the project SPV against losses arising out of any disputes with respect to delays in the acquisition of land. The permitting risks are usually low where the project involves upgradation of an existing operating stretch, however such risks are significant where projects involve bypasses or involve construction of entirely new stretches, where considerable amount of land needs to be acquired.

Apart from the permitting risks, ICRA also evaluates the vulnerability of the project to cost and time overruns, and the SPV’s financial flexibility to fund these over-runs. This assumes significance, given that in such BOT projects, cost escalations need to be funded by the project company, which could affect the project’s leverage and also returns to the investors. Road construction projects are often confronted with challenges related to the mobilization of labour and equipment. Further, factors such as difficult terrain, inadequate investments in construction equipment, weather and labour problems also contribute to construction delays and cost escalations. These risks are partially mitigated through strong fixed-price fixed-time EPC contracts with strong counterparties with adequate liquidated damage provisions for non-performance. In such cases, ICRA assesses the financial and operational capabilities of the EPC contractor and its ability to meet the contractual commitments.

In many NHAI owned BOT road projects, there is a clause of provisional COD if atleast 75% of the project stretch is completed and the remaining work is pending due to reasons attributable to the authority. Provisional COD gives the concessionaire the right to start partial tolling and protects the revenue loss in case of delays in project completion. Further, in many cases the authority also has to provide atleast 80% of the RoW before the commencement of the concession of the project. These provisions protect the concessionaire from loss of revenues on account of delays in handing over of the required RoW and mitigate the project execution risks to that extent.

ICRA also evaluates the quality of construction and robustness of the project design. Project owners usually lay down the design and quality parameters in the concession agreement. These parameters would need to be adhered to by the concessionaire, and certified by the independent engineer before the stretch can be opened to traffic. ICRA believes that the adequacy of design to withstand growing traffic volumes and the quality of the drainage system (especially for road’s which are susceptible to flooding) would determine the future O&M requirements and frequency of periodic maintenance.

Revenue Risks
Post completion of construction activity, debt investors in toll road projects are primarily exposed to the risks associated with the build-up of traffic volumes and the user’s willingness to pay tolls as per the prescribed rates. ICRA believes that the traffic risks associated with such facilities are primarily dependent on the following factors:

- The economic utility of the stretch; in this context ICRA believes that projects which serve a captive demand, such as stretches which connect to ports or city bypasses which relieve congestion levels, carry relatively lower levels of traffic risks.
- The availability of alternative freeways and other competing modes of transport (such as railways), which could lead to traffic diversion.
- The economic and demographic conditions within the catchment area of the road.
- The composition of traffic along the stretch and the sensitivity of various user segments towards payment of tolls.
- The economic value provided by the road in relation to the tolls levied.

Forecasting future traffic volumes and measuring the market risks associated with toll road projects is quite challenging, given the absence of reliable and sufficiently long historical traffic data in most parts of the country. ICRA therefore relies on independently conducted traffic studies to assess the future revenue...
potential of the projects. The traffic studies are however suitably sensitised to assess the cash flow protection available to debt investors in case of a shortfall in traffic levels. In a number of toll road projects in India, there has been considerable shortfall in toll collections vis-à-vis projections based on traffic studies which necessitates such an approach. Estimating the sensitivity of future traffic flows to toll rates is also challenging, given that in most cases commuters have had free access to the highway infrastructure in the country. ICRA assesses the price elasticity of demand by evaluating the economic value provided by the road, and the sustainability of the time/value savings over a period of time under different assumptions of freight rates and fuel prices.

ICRA believes that traffic projections for improvements to existing roads have relatively better predictability as compared to new roads, wherein subjective judgments need to be made about the ability of the stretch to attract traffic from existing alternatives. In some cases, the project owner provides grants which could either be disbursed upfront, or progressively over the concession period. From a credit perspective, grants are a key mitigant against market risks. ICRA assesses the credit quality of the grant provider and the manner in which the grant would be disbursed. Further, in some specific cases particularly state highways, alternative sources of revenue could also be significant – such as those projects which have land development rights along the corridor under management – and need to be factored in while assessing market risks.

Operating Risks
Operating risk is the risk of the project not conforming to the required performance parameters over the period of the concession agreement. Typically, performance parameters specified in the concession agreement are driving quality of the carriageway, safety standards, adherence to maintenance schedule, and road availability standards. Non-compliance with some of the performance parameters may be an ‘event of default’ and impinge on the developer’s ability to collect tolls. Furthermore, in the event of poor maintenance, attractiveness of the road may diminish making commuters shift to alternative stretches, if any. The concessionaire’s ability to fairly assess operating expenses and lay down a proper maintenance schedule is important to protect future revenue streams.

Operations and maintenance (O&M) expenses for road projects are primarily of two types:
- Periodic maintenance, which involves the relaying of the asphalt-concrete (top layer) once every five to seven years.
- Routine maintenance, which involves repairing of cracks, replacement of safety girders along the highway, clearance of debris following accidents, ensuring functionality of sign posts, maintenance of a security set-up, and such other activities.

Apart from the operating capabilities and the financial strength of the O&M contractor, the other issues, which ICRA assesses at while evaluating O&M risks in BOT road projects are:
- The mechanism by which the scheduled O&M expenses would be funded: O&M outflows are likely to peak in the 5th and 10th years, when the periodic maintenance involving the relaying of the top surface would need to be carried out. ICRA therefore believes that the project structure should provide for an O&M reserve that would get built up gradually, either from the toll revenues themselves or through an external liquidity support mechanism (standby LCs, BGs etc), so that adequate funds are available for these peak outflows.
- Inflation sensitivity of the O&M estimates: The O&M estimates would be highly sensitive to inflation, and would therefore be difficult to budget over a 15-year period. Most of these projects are likely to enter into fixed cost O&M contracts possibly with the sponsors themselves. ICRA however believes that in the event that actual expenses exceed the budgeted costs, the incentive for the O&M contractor to maintain the road in accordance with the terms could diminish, thereby impacting the ride quality and hence the toll collections.

Funding and Financial Risks
Similar to other infrastructure projects, road sector projects are also characterised by fairly high levels of capital intensity. The capital intensity of such projects is however dependent on a number of variables, which include the nature of the surface (bituminous tar versus concrete), the terrain over which the road traverses, and the number of structures (bridges, culverts, rail over bridges), which need to be constructed. These projects are usually funded with a considerable reliance on external debt, although in most cases
grants from the project owners serve to keep leverage at moderate levels. ICRA evaluates the financing structure for exposure to interest rate and refinancing risks, given the limited appetite of the Indian capital markets for fixed interest rate long duration (in excess of 10 years) project finance debt. A floating interest rate structure could potentially affect debt servicing, particularly during periods of rising interest rates. The capital structure is also reviewed for the repayment structure of the debt - a rear ended maturity profile usually being considered preferable for such projects given that toll revenues usually increase over the first 8-10 years of the concession period. As discussed earlier, the concession agreements for most of these road projects usually provide debt investors with access to a termination payment from the project owner, in the event of default by the project SPV on its contractual commitments. While evaluating the credit risk profile of these projects, ICRA evaluates the ability of the project owner to make such payments and also the sufficiency of these inflows for meeting the debt service commitments of the project.

A key element of the analysis is an assessment of the sufficiency of revenues for meeting operating expenses and debt service obligations. The key sensitivity scenarios include variability in traffic volumes and toll rates, time and cost overruns during the construction phase and variability in operations and maintenance expenses post completion. Stress tests are all the more important if it emerges that significant traffic and revenue growth is necessary for meeting contractual obligations.

**Structure Risks**

As mentioned earlier, most of the BOT toll road projects are funded through SPVs, without direct recourse to the sponsors for debt servicing. Toll revenues, and in some cases income from development rights on land along the corridor, comprise the only sources of revenue available to the project SPV. Thus, apart from assessing the economic viability of the project, ICRA also reviews certain structural aspects of these projects, which include the process by which these revenue streams are aggregated in collection accounts and subsequently transferred to the debt service reserve accounts (DSRA) after funding the O&M and major maintenance reserve account (MMRA). Presence of strong escrow mechanism and ring fencing of cash flows to prevent any leakage of funds are some of the structural considerations. Availability of adequate funds in DSRA so as to cover atleast six months of debt servicing obligations also provides structural support for ratings. Similarly, maintenance of MMRA to build sufficient funds for undertaking the scheduled major maintenance activities also supports the ratings. Other forms of credit enhancement include senior-subordinate debt structuring, accelerated prepayments on activation of triggers, etc.

ICRA also reviews the minimum coverage ratio requirements that must be met prior to payment of dividends, and creation of minimum liquidity buffers either through over collateralization or through standby letters of credit, for meeting revenue shortfalls due to disruptions in operations. In addition, guarantees from sponsor for O&M, major maintenance cost overruns as well as event based risks like termination payment shortfall etc could act as credit enhancing features. While rating such projects, ICRA also draws comfort from the presence of an experienced trustee, who would effectively control the project cash flows and regularly monitor the progress of the project on behalf of the debt investors.

**Conclusion**

ICRA’s credit ratings are a symbolic representation of its opinion on the relative credit risk associated with the instrument being rated. This opinion is arrived at following a detailed evaluation of the issuer’s business and financial risks, its competitive strengths, its likely cash flows over the life of the instrument being rated, and the adequacy of such cash flows vis-à-vis its debt servicing obligations.

As this note highlights, for BOT road project SPVs, project risks assumes importance during implementation phase while post COD the rating transition takes place depending on the toll collections. Overall, ICRA would have a relatively more favourable opinion on projects, which have been conservatively funded, have been promoted by strong sponsors, and which have access to favourable existing traffic flow characteristics. For such projects, ICRA would also draw comfort from the presence of a strong collection agent and allocation of O&M related risks to a strong O&M contractor, with requisite experience in operations and maintenance of such stretches. Further, ICRA would also draw additional comfort from the maintenance of debt service reserve accounts, build-up of adequate major maintenance reserve, and the presence of a strong trustee, who would effectively monitor the progress of the project.

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