

Risk Analysis and Mitigation Measures of BOT Infrastructure Projects



Economy

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Abstract

The growth of the infrastructure sector in India has been relatively slow compared to the industrial and manufacturing sectors. The Build-Operate-Transfer (BOT) scheme is now becoming one of the prevailing ways for infrastructure development in India to meet the needs of India's future economic growth and development. Hence there are tremendous opportunities for foreign investors. However, undertaking infrastructure business in India involves many risks and problems mainly due to differences in legal systems, market conditions and culture. It is crucial for foreign investors to identify and manage the critical risks associated with investments in India's BOT infrastructure projects.

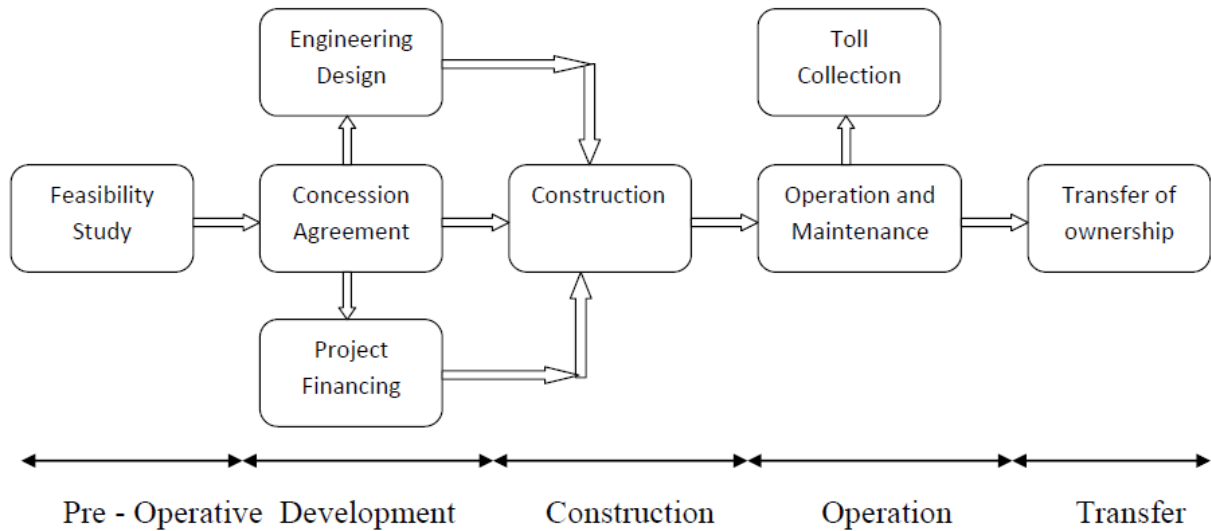
Introduction

With the growing demand of public services and overburden of heavy budget on the government, BOT scheme is now emerging as one of the best solution to growing infrastructure needs. The growing trend can be best analyzed through the data of various infrastructure projects which GOI has offered on BOT basis in recent years (Table 1). However in order to create a successful BOT project, it is necessary to clearly identify, evaluate and manage various risks associated with BOT infrastructure Projects.

Project	Budgetary Grant (Rs.bn)	Debt		Internal Accurals (Rs.bn)	Privatisati on/BOT (Rs.bn)	Funding not tied up (Rs.bn)	Total (Rs.bn)	Construction Component	
		Multi Laternal (Rs.bn)	Market Borrowings (Rs.bn)					(%)	(Rs.bn)
Power	245	175	1,274	413	885	-	2,992	53.9	1,803
Roads	368	296	167	-	1,286	350	2,467	100	2,466
Ports	100	-	-	-	150	-	250	50	125
Martime Dvlpt Program	69	-	-	30	235	-	334	60	201
Railways	248	241	-	50	211	-	750	42	315
Airport	7	-	5	5	212	-	229	42	96
Pipelines	-	-	250	150	-	-	400	40	160
SEZ	10	5	10	-	91	-	116	45	52
Irrigation & Water Supply	156	181	81	8	35	-	461	45	207
Bus Terminals	-	-	-	-	9	-	9	70	8
Urban Infra	67	195	33	35	300	-	630	60	378
Total	1,270	1,093	1,820	691	3,414	350	8,638	65.1	5,811

Risk Identification and Mitigation

The success of a project is measured by the overall project cost, duration and quality of the final product or services delivered. An infrastructure project typically faces risks throughout project period, which has to be mitigated to enable financing on a limited project recourse basis. The type and degree of risks in a project vary at different phases of a project. The phases of BOT project are Pre-Operative Development, Construction, Operation and Transfer as shown in Fig 1.



Based on the case study of a BOT project “Delhi-Gurgaon Toll Road”, the risks encountered during different phases of the project and their mitigation measures, have been identified in Table. 2.

Phase	Type of Risks	Degree of Sensitivity	Primary Risk Bearer	Mitigation Measures
Pre-Operative Development	A. Delays in land acquisition for the proposed project	High	Central or State Govt.	Clearly defining key obligations of the host Govt. to the Concessionaire for Right of Way free from all encumbrances, environmental clearances, permits etc.
	B. Financing risk i. Technology risk ii. Credit risk iii. Bid risk	Medium	Private sector (Concessionaire)	i. Clearly defining key obligations of the Concessionaire in the agreement, equity participation of the project sponsors. ii. Selection of sponsors based on credit strength ratings of credit rating agencies. iii. Clearly defining equity, success fee in agreement.
Construction	Design risk	High	Private sector (Concessionaire)	Provision in agreement for alteration in concession period arising due to changes in design, leading to time overrun.
	Construction/Completion risk	High	Private sector (Concessionaire)	Provision for increased cost sharing by concessionaire and host Govt., additional capital injection by sponsors and standby credit facility from original lenders for incorporating cost overrun arising due to change in scope of work.

Operation	Operation & Maintenance risk	Medium	Private sector (Concessionaire)	Selection of experienced operators
	Market/ Economic risk	Low	Private sector (Concessionaire)	Offtake agreement to provide lenders security, additional financing to concessionaire by host Govt. for undermining the returns of the investor.
	Raw material supply risk	Medium	Private sector (Concessionaire)	Feedstock arrangements, supply agreement
	Financial risk	Medium	Private sector (Concessionaire)	Provision for Bank assurance, Coupon Swaps, Escrow account to incorporate changes in interest rates, exchange rates etc.
Transfer	Transfer / Handover risk	Medium	Private sector (Concessionaire)	Provision of joint inspection 2-3 years prior to expiry of concession period.
Other Risks	Change in Law	Low	Private sector (Concessionaire) and Host Govt.	Provision for amendment in concession agreement for accounting financial benefit or loss to the concessionaire .
	Force Majeure	Low	Host Govt.	Provision for extension in concession period and project schedule date for the force majeure event period.

Table 2.

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