

# Potential of Applying Built-Operate Transfer (BOT) System for Sri Lankan Highways- Case study on Colombo-Katunayaka Expressway (CKE)

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## Abstract

The Sri Lankan transport network had a massive development during the last decade, experiencing highway infrastructure with the utilization of foreign concessions and local government funds of the country. The Road Development Authority holds the pioneer authority to operate and maintain the system periodically. The user benefits generated with these highways include travel time saving, developed infrastructure and living standards, also social benefits which are not counter measured quantitatively.

As a developing country, the lack of financial stability for infrastructure of the government may lead to foreign loans and concessions. The concessions lead to rapid involvement in the fund involvement for mega infrastructure projects as the necessity and demand of the country. The Build - Operate and Transfer (BOT) concession model is becoming a major trend in the privatization of the infrastructure projects, the concession period and interest rate are the critical parameters for BOT contracts.

A model for the evaluation of the potential of applying BOT system for the highways is developed in the study. The demand estimation, operation and maintenance cost, and toll income are used as the inputs for this model and financial viability is observed with different scenarios. The concession period, interest rates and optimality of the selection of BOT are decided with different criteria based on financial viability. As the Colombo-Katunayake Expressway (CKE), meets the highest demand for traffic in the Sri Lankan highway network, it is used to demonstrate the applicability of the proposed methodology. To minimize the ridership guarantee, the gap in-between the accumulated revenue and accumulated costs, optimum subsidy level is eliminated by differentiating acceptable criteria. Also, the BOT model is further expanded with risk assessment with the current trends, applying the suitability of applying to the expected income gain interconnecting with the Outer circular highway (OCH), Southern Expressway and ongoing Central Expressway to the CKE with different scenario analysis by minimizing the ridership guarantee.

**Key words:** BOT, Concession period, Financial viability, Traffic demand, Ridership Guarantee

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