

DECISION MAKING OF FINANCING AND CONTRACTING IN NATIONAL HIGHWAYS

Pratik R. Padhye¹, S.K. Dharmadhikari²

M. Tech. student¹, Department of Civil Engineering, College of Engineering, Pune
Project Advisor² (Tunnels and Bridges) National Highways & Infrastructure Development Corporation Limited, New Delhi

Abstract-

India has a growing need of new and better Infrastructure. To meet the challenges of growing demand for new and better infrastructure services like highways in short duration is the biggest challenge. To fulfill these challenges proper and reliable financing and contracting methods are must. The government of India has been promoting the involvement of private entrepreneurs in development of road projects by overcoming the limitations of financing and contracting. The government of India has taken initiative for new, innovative financing and contracting methods such as PPP, EPC, and HAM etc. over the past few years but have their own limitations. This paper discusses about the attributes which are crucial towards the decision making of financing and contracting. These attributes were found out by literature survey as well as a pilot survey is done to find out the important attributes and ranked accordingly. These attributes are categorized into Policy & Political, Economy & Legal, Process & Fiscal and Environmental & Miscellaneous. This study will help to refine the process of decision making of financing and contracting in National highways.

1. Introduction-

India is currently one of the fastest growing economies in the world. It is sixth largest economy by nominal GDP. The country has GDP growth of about 7.2% in the last quarter of 2018. Sustaining this rate of growth will need huge investments in physical infrastructure such as roads. It is estimated by World Bank that India will need US \$500 billion investment let alone in the transportation sector.

An efficient transportation system is critical for sustaining economic growth and the burgeoning demand for passenger and freight movement. Recognizing this, the Government of India (GOI) and several state governments have launched initiatives during the past decade to modernize and improve the transport infrastructure.

According to a report by World Bank about Indian road construction Industry,

Many traditional road contractors have diversified into real estate, hydropower and industrial infrastructure, sensing growth opportunities in those sectors, but contractors traditionally engaged in other infrastructure sectors have not ventured into road construction in a big way. The reasons as follows:

- (a) Low operating profit margins (typically 6-10%), lower than real estate (about 20-25%) or hydropower (about 15%)
- (b) Management of the sector predominantly by public road administrations with weak contract administration capacity leading to delayed decision making, delayed payments and a large number of inordinately delayed unresolved disputes, unlike some other sectors like industrial infrastructure or real estate managed by more professionally run private institutions or serving the public directly;
- (c) More challenging logistics and elaborate contract management arrangements, as the projects are linear in nature.

It is estimated that at present the road construction industry represents about 10-15% of the overall construction industry in India. If the significantly scaled up demand is to be met, attracting contractors from other sectors of infrastructure to road construction will be critically important.

The Indian Government State as well as central has taken steps to tackle these problems by introducing new contracting methods such as Public Private Partnership (PPP), Engineering Procurement Construction (EPC), and Hybrid Annuity Model (HAM). Also some reforms are introduced highlighted below:

- (a) Road sector has been accorded the status of an industry via Section 18 (1) (12) of the Infrastructure Act.
- (b) Establishment of Infrastructure Development Finance Company (IDFC) to meet the long-term financial needs of the infrastructure sector. IDFC, among other things, will act as a direct lender, refinancing institution, and provider of financial guarantees.
- (c) The Government of India has initially permitted automatic approval for foreign equity participation up to 74% in construction and maintenance of highways, roads, tunnels, etc. Foreign equity participation up to 100%, subject to a ceiling of INR 15 billion (approximately US\$ 300 million), has been allowed through a subsequent revision.
- (d) Highways projects involving widening of existing highways are exempted from environmental and forest clearances.
- (e) Announcement of guidelines for development of road projects through Build–Operate–Transfer approach has been made. These guidelines were meant to simplify the procedures concerning initial feasibility studies, acquisition of land, relocation and resettlement of affected establishments, environmental clearances, and equity participation in the highway sector.
- (f) PPP project promoters are allowed to raise external commercial borrowings up to 30% of the project cost.
- (g) Model concession agreements for projects costing of less than INR 1 billion (approximately US\$ 20 million) and for projects costing more than INR 1 billion (approximately US\$ 20 million) have been finalized. These will ensure uniformity in the various agreements for PPP road projects.

Public Private Partnership (PPP): It is an arrangement between the public and private sector with clear agreement for delivery of public infrastructure or public services. There are various forms of PPP such as Built Operate Transfer (BOT), Built own operate Transfer (BOOT) etc.

Engineering Procurement Construction (EPC): EPC contract will carry out detailed design of project, procure all the equipment and materials required and then construct functioning facility prescribed by the client within stipulated time period.

Hybrid Annuity Model (HAM): HAM is a mix of EPC and BOT model of contracts. It combines 40% EPC and 60% BOT (annuity).

Research methodology-

The methodology adopted for this study is as follows;

- (1) Literature review to identify major factors influencing decision making of financing and contracting in National highways.
- (2) Unstructured interviews and discussions with the participants to validate the shortlisted factors of National highway projects.
- (3) Survey among four major stakeholders/ participants in National highway projects viz., government representatives, promoters/ developers, lenders and consultants.

(4) The analysis of survey is done by using relative importance index (RII) method. A five point Likert scale is used 5 being most significant and 1 being least significant.

$$\text{RII} = \text{Sum of weights (W1 + W2 + W3 + \dots + Wn)} / A \times N$$

Where, W= weights given to each factor by the respondents, A= highest weight and N= total number of respondents.

POLICY & POLITICAL
1) Succession, 2) Regulatory process, 3) legislative, 4) change in scope, 5) Risk allocation Mismatch, 6) Audit, 7) Political force
ECONOMIC & LEGAL
8) Demand, 9) Sponsor, 10) Credit, 11) Taxation, 12) Cost & cost overrun, 13) Inflation, 14) Insurance, 15) Interest, 16) life cycle costs, 17) Market familiarity, 18) Market competition, 19) Delay in financial closure, 20) foreign exchange, 21) Payment mechanism, 22) Traffic revenue, 23) revenue tariffs, 24) Debt servicing, 25) Legal capacity, 26) change in law
PROCESS & FISCAL
27) Feasibility Studies, 28) Acquiring planning approval, 29) Bid process, 30) Joint venture structure, 31) structure of owner organization, 32) local partners/ Subcontractors, 33) commissioning/ start up, 34) site and land acquisition, 35) availability/ procurement, 36) Project schedule
ENVIRONMENTAL & MISCELLANEOUS
37) Climate, 38) Demography, 39) Social/ Protestors, 40) resettlement and rehabilitation, 41) design defect, 42) construction technology, 43) project performance standards, 44) project management ability, 45) product quality

Table 1- Decision making attributes for financing and contracting in National highways.

Conclusion and Discussion-

The attributes which have most significant value are listed as follows;

- | | |
|--------------------------------|-------------------------------------|
| (1) Traffic revenue | (10) Life cycle costs |
| (2) Revenue tariffs | (11) Bid process |
| (3) Site and land acquisition | (12) local partners/ Subcontractors |
| (4) Delay in financial closure | (13) Social/ Protestors |
| (5) Project schedule | (14) Construction Technology |
| (6) Cost & cost overrun | (15) Payment mechanism |
| (7) Debt servicing | |
| (8) Political force | |
| (9) Change in scope | |

The above attributes listed have given most significance by the respondents. These attributes have much larger scope of improvement. While making decision about financing and contracting in National highways these attributes should be taken into consideration.

References-

- L. Boeing Singh, Satyanarayana N. Kalidindi, ELSEVIER 2006 *Traffic revenue risk management through Annuity Model of PPP road projects in India*
- Lakshya kumar, apurva jindal & nagendra r. velaga, ELSEVIER 2017 *Financial risk assessment and modeling of PPP based Indian highway projects*
- L. Y. Shen, H. Li and Q.M. Li ,ASCE 2002 *Alternative concession model for Built Operate Transfer contract projects*
- Vialeta Khmel, Shengchuan Zhao, School of Transportation and Logistics, Dalian University of Technology, ASCE *Arrangement of financing for highway infrastructure projects under the conditions of Public-Private Partnership*
- Jin fang shr, Wei tong Chen, ELSEVIER, 2003, *A method to determine minimum contract bids for incentive highway Projects.*

