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A Study of Hybrid Annuity Model (HAM) Road Project

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ABSTRACT: The road projects in India were not being completed on the time because of certain problems like toll collection risk, traffic risk which had to be borne by the concessionaire. Also, there was a controversy of rising bad loans of banks due to which banks were not willing to lend. These all factors led to delay in completion of road construction projects. So, as to overcome the limitations of other existing model and to give a boost to the construction sector, government launched hybrid annuity model which is an improvement over the present models and can make sure that the project will be completed on time. This paper first discuss the feature of hybrid annuity model in road infrastructure, later it compares the HAM with the standard BOT model of road development so as to identify the benefits and risk allocation under hybrid annuity model, which is able to stake holders to investigate the newest trends of HAM project awarded by NHAI.

I. INTRODUCTION

Indian road network in India is one of the largest road network in the world aggregating about 5.3 million km and need a enormous funding for maintaining and construction of new projects. To give boost to economic development and to change the face of roads network , government in 1998 introduced public private partnership model system in order to improved the quality of road network. Public private partnership models has really been a boost to infrastructural development but primarily major contribution in building of roadways and highways. Government in most developing countries face the challenges to meet growing demand for new and better infrastructural services. As obtainable funding from traditional sources and capacity in public sectors to implementation of project at one time limited. Government need have found that partnership with private sectors is an striking another to increase and improve the supply of infrastructure. This models plays a key role because it determine the type role which would be share between public and private parties. So before going to actual construction work a proper model should be adopted which would facilitate smooth flow between both parties.

So in India road projects are awarded by different types of model used for roads infrastructure:

- Build-Operate-Transfer model
 - a) BOT (Toll) model
 - b) BOT (Annuity) model
- Engineering Procurement Construction
- Hybrid Annuity Model

1. The Build Operate and Transfer (BOT) Annuity Model- Under BOT Annuity, a developer builds the highway, operates it for the specified duration and transfer it back to the government.

The government starts payment to the developer when the launch of business operation of the project. Generally, Payments are made on 6 month basis.

2. BOT TOLL Model-

In this Toll based, a road developer constructs the road and he is allowed to recover his investment through toll collection. This toll assortment are going to be over a amount of nearly thirty years in most cases.

There is a government payment to the developer as he earns his money invested from Toll.

3. Engineering, Procurement and Construction (EPC) Model-

Under this model, the cost is totally borne by the govt. Government invites bids for engineering knowledge from the private developers. Procurement of raw materials and construction cost are met by the government. The private sector participation is minimum and is limited to the provision of engineering expertise. Drawback of the models is high financial burden to the government.

HYBRID ANNUITY MODEL-The HAM model comprehended by government in 2016 to bring back the private participation in highway projects, which had dried up within the previous couple of years. This is actually the most recent version of Build-Operate-Transfer model which are currently employed in different road project particularly by National Highway Authority of India and to remedy the troubled relationship between public and private sectors. This model marked a important policy departure in management of long and short term public interest which is inherent to public utilities and facility delivery. The HAM is a mix of BOT and EPC MODEL format with the govt and private sector sharing total project cost within the ratio of 60:40 respectively. Under this model, govt provide 40% of project cost during process and released of remaining fund is linked to progress of construction. The private player must to raised 40% in style of equity or annuity. since overall requirement is smaller as compared to other models. With the HAM model, the govt will take responsibility of the toll collection, while the Highway Authority will collect the toll charges and refund it as payments to the government over a period of 10 years (in 20 installments).

The contractor is freed up from expenditure his 100% cash reserves for the project subsequently the government also shares the financial risk. On the opposite hand, when likened to EPC projects, the HAM model will also ease the income pressure on NHAI.

The HAM model will improve the acclaim profiles of infrastructure and contract developers. This offers them the sureness to contribute in more PPP projects

The introduction of HAM project will not put an entire end to BOT model, especially the BOT (toll) model. The govt can select to implement the HAM model for projects that are trapped because of money problems or where other models are not applicable.

II. OBJECTIVE OF THE STUDY

1. To analyze the hybrid annuity model used in construction with regards to other existing model.
2. To study the advantages and disadvantages of HAM.
3. To study the risk allocation under hybrid annuity model.

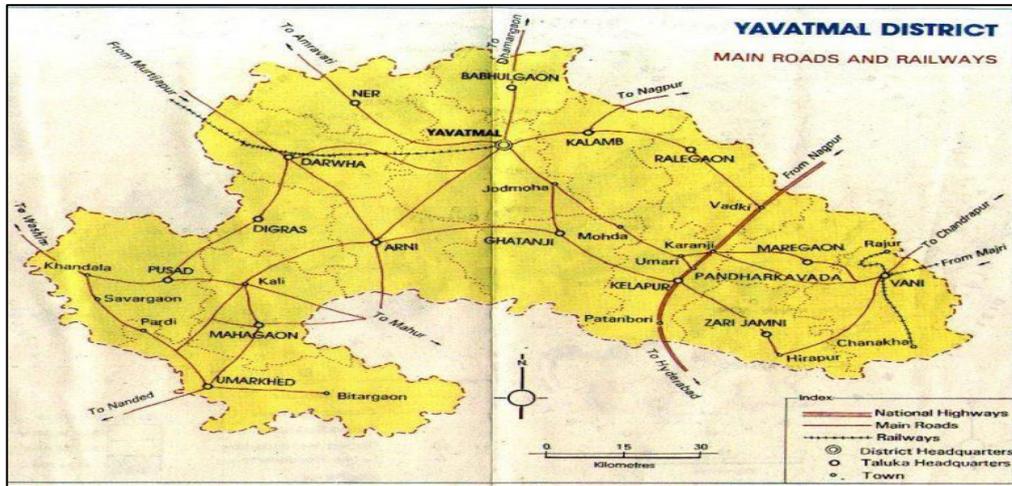
CASE STUDY- so to have better preview of performance of hybrid annuity model project carrying out case study of HAM project on pandharkawda to zharijamni road in yavatmal district which join from kolambi to zharijamni road in the division of pandharkawada.

Total length of project = 77 km

Total cost of project = 2 crore

In this project government invest 60% of total project cost during construction phase and 40% has to arranged by private player and this payment will be made on the basis of annuity and remaining payment will paid as variable annuity amount depending on the value of assets created as follow

- **Milestone 1- 10% at 20% of work completion**
- **Milestone 2 –30% at 40% of work completion**
- **Milestone 3 – 50% at 60% of work completion**
- **Milestone 4 – 75% at 80% of work completion**
- **Milestone 5 – 90% at 100% of work completion**



Map of HAM road project in yavatmal district

AS PER ANALYSIS, COMPARISON OF HAM AND BOT MODEL:

- Bidding Parameter-** In BOT model, bidder may be evaluated on the basis of the price that quote for executing a particular work in the conformance with the specifications laid down. While in HAM bid is awarded to developer who quoting lowest (project cost + O&M) cost for project life cycle cost.
- Total project cost –** In BOT model, total project cost (100%) is borne by the developer while in HAM 60% by the authority and remaining 40% by the private player.
- Permitting risk –** The permitting risk in BOT model is relatively high because developer had to manage all the risk during project. Whereas in HAM model this risk is relatively low as compared to BOT model.
- Mobilized advance –** There is no mobilized advanced under BOT model and in HAM mobilized advance is given and it is about 10% of total project cost.
- Termination payment –** The termination payment not available during construction in BOT model, while in HAM this payment is available during construction because share of payment is high as compared to BOT model.

ADVANTAGES OF HYBRID ANNUITY MODEL:

- Reduces Capital outflow for authority as compared to EPC Model:** Under the EPC model the government needs to pay for the entire investment during the construction period, whereas under HAM , the NHAI has to bear only 40 % of the cost initially during the construction period.
- Reduce equity investments by the developer:** Under HAM, NHAI bears the 40 % of the project costs during the construction period whereas rest 60% of the cost has to be borne by the developer, although the authority later pays the compensation to the developer. The developer generally invests not more than 20 – 25 % of the project costs, whereas remaining is raised as debt.
- Private sector not required to bear the traffic risk:** Under BOT model , the private player needs to study the traffic flow in a particular region before construction of the road in order to study the feasibility of the project. So, developer under BOT has to bear the risk of low passenger traffic. Whereas, under HAM , developer is being relieved of bearing the passenger traffic risk.



DISADVANTAGES OF HYBRID ANNUITY MODEL:

1. **Delay due to land acquisition:** Most of the road projects are delay due to acquisition of land because of various policies.
2. **Lack of transparency:** Due to the involvement of too many people and process so there is a changes subjected to risk of corruption.
3. **Delay due to financial availability:** project delay due to lack of financial viability.

RISK ALLOCATION UNDER HAM:

TYPE OF RISK	RISK SHARED BY BOT (TOLL)	RISK SHARED BY BOT (ANNUITY)	RISK SHARED BY HAM
Commodity risk	private	private	Shared between private and government
Operation and maintenance risk	private	private	private
Revenue risk	private	government	government
Construction risk	private	private	private

1. **Revenue Risk-** The revenue risk is borne by the government. This helps in overcoming the problems of both the lenders as well as concessionaire. The government is responsible for the toll revenue collection.

2. **Commodity Price Risk -** Commodity price risk is being shared between the project authority and the concessionaire. The bid project cost is adjusted by taking into account price indexes.

3. **Permission Risk -** Permission risk is being shared between the project authority and the concessionaire. The project authority is responsible only for the land acquisition as well as environmental clearance, all other permissions have to be obtained by the concessionaire.

4. **Operation and maintenance risk -** Operation and maintenance risk is being shared by the project authority as well as the concessionaire. The operation and maintenance expense is inflation adjusted and any increase in expense on account of inflation is being partly shared by the government.

5. **Construction risk -** Under BOT only on completion up to 75 % of the project cost, toll collection starts. In HAM, 80 % of the land is being made available by NHAI. After completion of 75 % of the work, half year annuity payments are paid by the government to the concessionaire in proportion to the work completed.

IV. CONCLUSION

From this it is concluded that Hybrid annuity mode will help in reviving the various road construction projects. Earlier, only big developers were only able to take the contracts. With the launch of hybrid annuity model, it will enable small



developers to execute the contracts as government will provide 60% of the project cost initially. It will also help in improving the credit rating of various developers as they would be able to execute the contract on time. This model would overcome the bank's problem of rising bad loans as banks were not willing to lend under the existing models. It would also solve the problem of the toll collection, land acquisition etc. This model essentially the future of construction in order to boost the pace of implementation of construction projects.

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