PUBLIC PRIVATE PARTNERSHIP (PPP) FOR ROAD SECTOR IN INDIA: AN OVERVIEW

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Abstract—India has second largest road network in the world spreading over 5.4 million km. But due to insufficient funds from public sector Indian road network fails to meet the required need of country. This gives raise to involvement of private sector in development of road network using their vast experienced and financial support. Government of India focuses on various strategies and new solutions to overcome the issues related to road sector. This paper focuses on various concept, current status and recent development in PPP for Indian road sector.

Keywords—PPP, Indian road network, PPP models, Life cycle, Responsibility matrix

I. INTRODUCTION

A Public-Private Partnership is "a contractual agreement between a public agency and private sector entity that allows for greater private sector participation in the delivery of transportation projects" (FHWA 2008). Public Private Partnerships can provide services or infrastructure in a cost-effective manner by combining the strengths of the public sector and their financial stability, willingness to invest, and the innovative management techniques of the private sector. Throughout the past 30 years, PPP arrangements have been used in different kinds of projects and it have proven to be efficient in many of them (Spiering and Dewulf, 2006). A PPP is an arrangement where the government agencies state their needs for long-lived, financially stable and capital-intensive transportation projects. It can also be defined as any medium to long-term relationship between public and private entity, involving the sharing of risks and desired profits of multi sector skills, expertise and finance to deliver desired policy outcomes.

The PPP procurement process normally starts with bidders prequalifying by responding to requests for qualifications (RFQs). After qualified bidders have been selected, the agency will issue a request for proposals (RFPs). Companies then submit proposals in response to the RFP. The government then evaluates all proposals and chooses a certain number to move to a final round where the government starts requesting detailed information in order to select a winning proposal based on the project type and objectives. The winning proposal doesn't have to be the least costly or the most technology advanced, it basically should consist of all the factors that offer the best value proposition (Feigenbaum, 2011). The main characteristics of public-private partnerships are a willing public participant that needs to provide a better level of service, and savings to the general public, and a willing private participant that is financially stable, and able to provide a more efficient, cost effective, and on time delivery of the project. The keys to PPP success are providing an opportunity for innovation, the establishment of an enduring relationship, fair and reasonable contribution of resources, and sharing of risk and responsibilities while establishing a shared vision based on trust between the participants.

A. PPP Advantages

- Ensure the necessary investments into public services and more effective resources management
- Better quality and timely provision of services
- A private entity have a great opportunity to obtain a long-term remuneration
- Private sector expertise and experience are utilized in PPP projects for delivering infrastructure services
Appropriate PPP project risks allocation between private and public sector enables to reduce the risk of project.

**B. PPP Disadvantages**

- Infrastructure or services delivered could be mostly expensive i.e. prior investment is high.
- In PPP project the public sector payments if postponed for the later periods then it can negatively reflect future public sector fiscal indicators.
- PPP service procurement procedure is much time taking and more costlier in comparison with traditional public procurement.
- PPP project agreements are long-term, complicated and comparatively inflexible because of impossibility to predict and evaluate all required events that could influence the future activity.

**C. PPP project cycle**

Project life cycle is the logical sequence of activities carried out during execution of project to achieve desired objectives. Basic six main timeline activities are classified and subgrouping of their stages and requirement is done in following table.

**Table 1: PPP Project Cycle**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Timeline</th>
<th>Stages</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Preliminary Qualification</td>
<td>Preparation of national and legislative regulatory structure</td>
<td>Legal context, Institutional capacity, National policy, Priority funding strategies</td>
</tr>
<tr>
<td>2.</td>
<td>Project Identification</td>
<td>Suitability assessment</td>
<td>Desired gains, Obstacles and constrained, Private sector interest, Cost benefit analysis</td>
</tr>
<tr>
<td>3.</td>
<td>Project Appraisal</td>
<td>Selection of PPP type, Define PPP structure</td>
<td>Needs assessment, Risk allocation, Funding strategy, Expectations of PPP</td>
</tr>
<tr>
<td>4.</td>
<td>Design and Agreement</td>
<td>PPP project design, Procurement process selection, Agreement of funders and national authorities</td>
<td>Integration of PPP into design, Procurement procedure selection and design, Financial and socio-economic appraisal</td>
</tr>
<tr>
<td>5.</td>
<td>Procurement</td>
<td>Tender, Evaluation, Contracting</td>
<td>Open and transparent process, Detailed recording</td>
</tr>
<tr>
<td>6.</td>
<td>Implementation</td>
<td>Construction, Operation, Monitoring</td>
<td>Effective working relationship, Effective implementation structure</td>
</tr>
</tbody>
</table>

**II. BACKGROUND OF INDIAN ROAD NETWORK**

India has the second largest road network across the world at 5.4 million km. This road network transports more than 60 per cent of all goods in the country and 85 per cent of India’s total
passenger traffic. The transport infrastructure sector in India is expected to grow at 6.1 per cent in real terms in 2017 and grow at a Compounded Annual Growth Rate (CAGR) of 5.9 per cent through the year 2021, thereby becoming the fastest-expanding component of the country's infrastructure sector. The construction of highways reached 8,142 km during FY 2016-17, with an all-time high average pace of 22.3 km per day. In the first two months of FY 2017-18, 1,627 km of highway was constructed at an average of 26.3 km per day.

The Union Minister of State for Road, Transport and Shipping has stated that the Government aims to boost corporate investment in roads and shipping sector, along with introducing business-friendly strategies that will balance profitability with effective project execution. In the Union Budget 2017-18, the Government of India has allotted Rs 64,000 crore (US$ 9.55 billion) to NHAI for roads and highways and Rs 27,000 crore (US$ 4.03 billion) for PMGSY.

Road projects worth Rs 34,000 crore (US$ 5.32 billion) are being undertaken by the central government to decongest the road network connecting the National Capital Territory of Delhi. The Road Transport & Highways Ministry has invested around Rs 3.17 trillion (US$ 47.55 billion), while the Shipping Ministry has invested around Rs 80,000 crore (US$ 12.0 billion) in the past two and a half years for building world class highways and shipping infrastructure in the country.

III. PPP IN ROAD SECTOR

The Government of India defines a P3 as "a partnership between a public sector entity (sponsoring authority) and a private sector entity (a legal entity in which 51% or more of equity is with the private partner/s) for the creation and/or management of infrastructure for public purpose for a specified period of time (concession period) on commercial terms and in which the private partner has been procured through a transparent and open procurement system"(Ministry of Finance, Government of India).

In PPPs, the private partner assumes the hitherto traditional role of the public entity of delivering services to the general public under conditions that are monitored, independently or by a Government agency, regulated or left to the market, depending on the nature of the services/assets. It is important to note, though, that the ultimate accountability to users for provision of these services continues to remain with the public entity, even if the delivery is by the private partner. For example, the National Highways Authority of India (NHAI) may contract out the responsibility for construction and maintenance of a road to a private party under a Build-Operate and Transfer (BOT) concession. However, the ultimate responsibility to users for providing good quality road services continues to remain with NHAI which needs to ensure that appropriate quality/service standards are maintained.

A. Types of PPP Models Use In Road Sector

1. Build Operate Transfer (BOT Toll): In the BOT model, public sector offers work to a private sector entity to design, build, operate and maintain these infrastructure facilities for a certain period of time called as concession period. During this concession time the private sector or entity has the responsibility to arrange the required funds for the project and is authority to collect revenues generated by the project in terms of toll from end users. The service will be then transferred to the public authority at the end of the concession period, without any remuneration of the private sector involved.

2. Build Operate Transfer (BOT Annuity): In this BOT model, public sector offers work to a private sector entity to design, build, operate and maintain these infrastructure facilities for a certain period of time called as concession period. During this concession time the private sector or entity has the responsibility to arrange the required funds for the project and then after completion of project public authority provide finance as per decided annuity basis; it may be six term or one year annuity period, till the completion of concession period. The service will be then transferred to the public authority at the end of the concession period, without any remuneration of the private sector involved.
3. **Build Own Operate Transfer (BOOT):** In a BOO model ownership of the infrastructure services remains usually with the project company for example a mobile phone network. The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership of the facility is transferred back to the public sector at the end of concession period. Therefore, the private company gets the benefits of any residual value of the project. Usually this PPP arrangement is used when the physical life of the project and concession period is short.

4. **Design Build Finance Operate Transfer (DBFOT):** In this model, the private party assumes the entire responsibility for the design, construction, finance, and operate the service for the period of concession and transfer it to public authority at the end of that period. This model is somehow same as BOT arrangement.

5. **Operation and Maintenance (O & M):** The Operation and Maintenance contracts has cover a wide range of contracts from technical assistance contracts through to full-blown operation and maintenance agreements and so it is difficult to give specific term about them. The main common features are that the awarding authority engages the private entity to manage a specific range of activities or work for a relatively short period of time generally 2 to 5 years. Management contracts are basically task specific and input rather than output focused. The simplest management contracts involve the private sector entity being paid a fixed amount of fee by the public authority for performing specific tasks - the remuneration does not depend on collection of revenue generated and the private operator does not generally take the risk of project service. Where the Operation and Maintenance contracts become more performance based, they may involve the operator taking more risk of services, even risk of asset condition and replacement of more minor components and equipment.

6. **Hybrid Annuity Model (HAM):** The newly launched HAM is a combination of BOT Annuity and EPC models. As per concession agreement, the government will contribute to 40% of the project cost in the first five years through annual payments (annuity). The remaining payment will be arranged on the basis of the assets created and the performance of the developer. Here, hybrid annuity means the first 40% payment is made as fixed amount in five equal installments whereas the remaining 60% is paid as variable annuity amount after the completion of the project depending upon the value of service created. As the government pays only 40%, during the construction stage, the developer should find money for the remaining amount.

7. **Design Build Operate Transfer (DBOT):** This model is similar somehow with BOT only funding option is common when the client has no knowledge of what the project entails. Basically finance is arranged by public authority. Hence he contracts the project to a company to design, build, operate and then transfer it. Examples of such projects are refinery constructions.

**B. PPP Model Wise Responsibility Matrix**

In Indian scenario of PPP road sector, there are seven PPP models use frequently. These models are differs only by their risk and responsibilities sharing characteristics. The government sector and private entity shares the responsibilities according to the sanction agreement of PPP model. Following table shows the various PPP model and responsibilities distribution between government sector and private entity.

<table>
<thead>
<tr>
<th>PPP Models</th>
<th>BOT (Toll)</th>
<th>BOT (Annuity)</th>
<th>HAM</th>
<th>DBFOT</th>
<th>O &amp; M</th>
<th>BOOT</th>
<th>DBOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>P</td>
<td>G</td>
</tr>
<tr>
<td>Financial</td>
<td>P</td>
<td>P</td>
<td>P/G</td>
<td>P</td>
<td>P/G</td>
<td>P</td>
<td>G</td>
</tr>
</tbody>
</table>
C. Current Status of PPP Road Projects

As per Ministry of Finance, Government of India, total 745 PPP projects are awarded and carried out from year 2005 to 2017. Following table shows the frequently used PPP models and respective project awarded in India.

Table 3: PPP Model Wise Project Awarded

<table>
<thead>
<tr>
<th>PPP Model</th>
<th>BOT (Toll)</th>
<th>BOT (Annuity)</th>
<th>HAM</th>
<th>DBFOT</th>
<th>O &amp; M</th>
<th>BOOT</th>
<th>DBOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Projects</td>
<td>335</td>
<td>138</td>
<td>60</td>
<td>147</td>
<td>58</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

(G = Government sector, P = Private entity)

IV. CONCLUSION

The Indian road sector plays a vital role in infrastructure services and development of county. The Indian government has taken various steps to enhance the condition of national highways. There are various PPP models used in road sector, but most commonly used are Build Operate Transfer (BOT) and Design Build Finance Operate Transfer (DBFOT). To overcome challenges facing in these models government of India launched new PPP model in 2015 named as Hybrid Annuity Model (HAM) and this model is widely acceptable by public and private sector. The models used in PPP projects are differs by their risk sharing and responsibility taking consideration between both sectors.

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