Public-Private-Partnerships: An effective tool for development of transportation infrastructure

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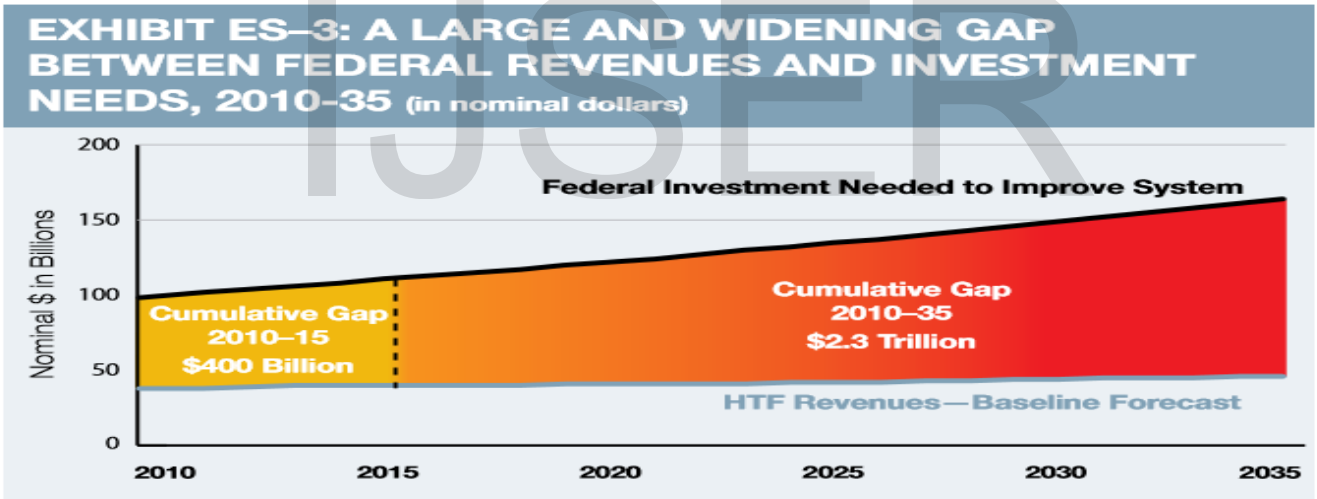
Abstract— People across the America are daily witnessing and experiencing the need to develop the existing infrastructure. Problems like congested roads; poorly functioning transit systems; and deteriorated social infrastructure all in urgent need of rehabilitation and redevelopment. The available government funding for rebuilding this infrastructure has been and is predicted to be in a large deficit. This paper helps us understand how Public-Private-Partnerships (P3's) can be used as an effective tool in reducing this funding deficit in infrastructure development. The paper focuses on development of transportation infrastructure and studies the characteristics, benefits and risks as well as case studies on successfully implemented P3 transportation infrastructure projects. The outcomes of the paper can be used to analyze the need for using P3's and innovative financing methods and recommendations by experts on use of P3's in implementing major infrastructure projects.

Index Terms— Transport planning, Public-private-partnerships, urban transportation, public transportation planning, infrastructure financing

1. INTRODUCTION TO THE TOPIC:

People across the America are daily witnessing and experiencing the need to develop the existing infrastructure. Problems like traffic on roads, poorly operated and maintained transit systems and deteriorated social infrastructure are all in urgent need of rehabilitation and redevelopment. The available government funding for rebuilding this infrastructure has been and is predicted to be in a large deficit. The World Economic Forum ranks US infrastructure behind that of most other comparable advanced nations such as Singapore, Germany, and the United Kingdom and is further predicted to worsen from 2013 to 2020, cumulative US infrastructure needs are estimated to be nearly $3.5 trillion. [1] [7]



Source: Paying our way, a new framework for transportation finance, final report of the National Surface transportation infrastructure financing commission, February 2009 [12]

Public-private-partnership (P3's) is an effective way of involving private sector to support the infrastructure development by undertaking funding, financing, planning, design, construction, operation and maintenance of a transportation facility. A public-private-partnership (P3's) be seen as an agreement between a public sector agency and a private company that promotes increased participation by the private partner in the development of an infrastructure project. P3's are getting importance as an effective tool in answering the growing demand and necessity for new and well-maintained transportation, transit and social infrastructure.

P3's practice in the United States is not as common a practice as it is in other countries but, in United States the private sector has been involved in development of public transport since long time specifically when public transportation had great return on investments. It is important that industry positively responds to the growing interest by private sector in P3's in the United States and can leverage strong partnerships towards the larger public interest. In recent years, federal government is encouraging private financing in transit projects through incentives and policies to bridge the ever-increasing funding deficit for

infrastructure re-building. The private sector investment in public sector projects started with transportation projects with highways and development of toll roads being a lucrative investment for private investors. Out of the 35 states, which have P3s enabled laws, only 18 states have ever finalized and closed out on financial stages of projects.

In the United States and Canada, areas like Portland, Vancouver, Charlotte, Toronto, Washington DC, San Diego, Miami and Atlanta have leveraged the transit-oriented development (TOD) by private sector entities. Almost all new and existing rail and road transit systems are working closely with private developers to assure greater investment in station areas and transit routes which will in turn increase transit usage. Public-owned assets, most notably the Chicago Skyway and the Indiana Toll Road, have been leased or purchased through concession agreements with private investors that have brought billions of dollars to their former public sector owners. [2]

2. UNDERSTANDING P3'S:

A P3 can be seen as an approach to diversify the source of funding from completely public sector funding to use of private financing and investments. P3's may be unique according to type of project like different roles and responsibility for construction of highway project and different for operations and maintenance of a mass transit system. In a typical P3 contractual arrangement certain risks and financial opportunities are transferred to private partner and the public partner in turn receives the desired services at lower cost, improved functioning and management and increased efficiency by deployment of technology.

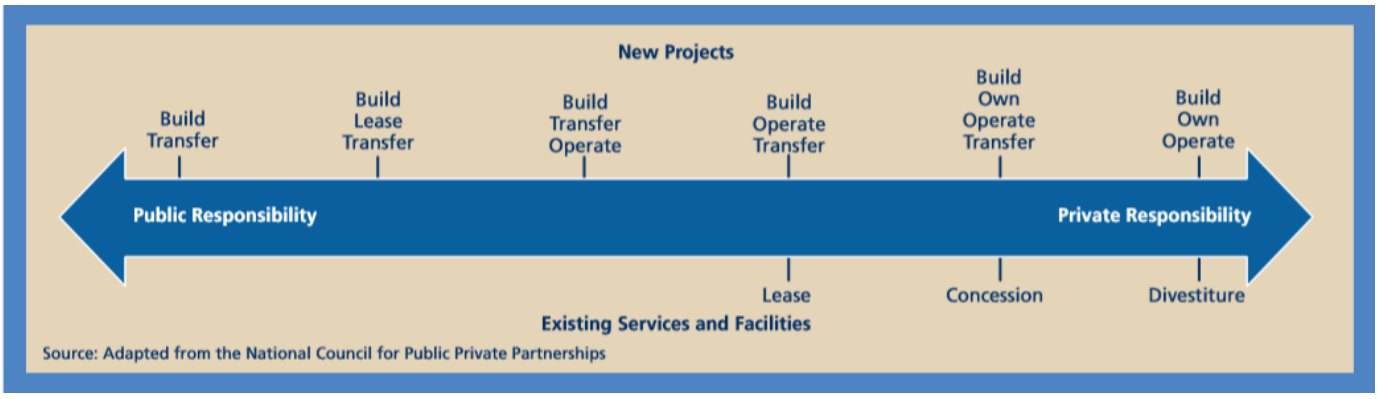
These partnerships may be classified into three broad categories: [2]

a. project development with direct financial contribution from private sector participants;
b. project delivery and operation with shared risk among public and private participants;
c. private investment in transit-supportive development

P3 structures can be utilized to maximize the benefits of private participation and investment without losing policy control and ownership of the asset. This relates to selecting services, primarily to protect and satisfy public concerns and interests and ensuring this should always remain a key objective of the service.

The U.S. Department of Transportation categorizes P3s according to six basic types, listed from least to greatest private responsibility: [3]

i. **Private Contract Fee Services**: Private sector is responsible for providing operations and maintenance, program or project management or funding.
ii. **Design-Build**: In these type two services are combined into one fixed-fee contract. The government agency retains ownership of the facility as well as responsibility for design development, funding and maintenance.
iii. **Design-Build-Operate-Maintain**: Private sector is responsible for operating and maintaining along with designing and developing
iv. **Long-Term Lease Agreement**: An existing facility is leased to for a defined time period to the private partner to intern pays an initial concession fee. Revenue generated from the project is accrued by the private partner and used towards operating the facility and as a return on investment.
v. **Design-Build-Finance-Operate**: Private sector is responsible for financing, revenue generation through tolls, government grants to develop and operate the project.
vi. **Build-Own-Operate**: Private sector is granted the right to design, build, operate, maintain and own a facility for longer periods.



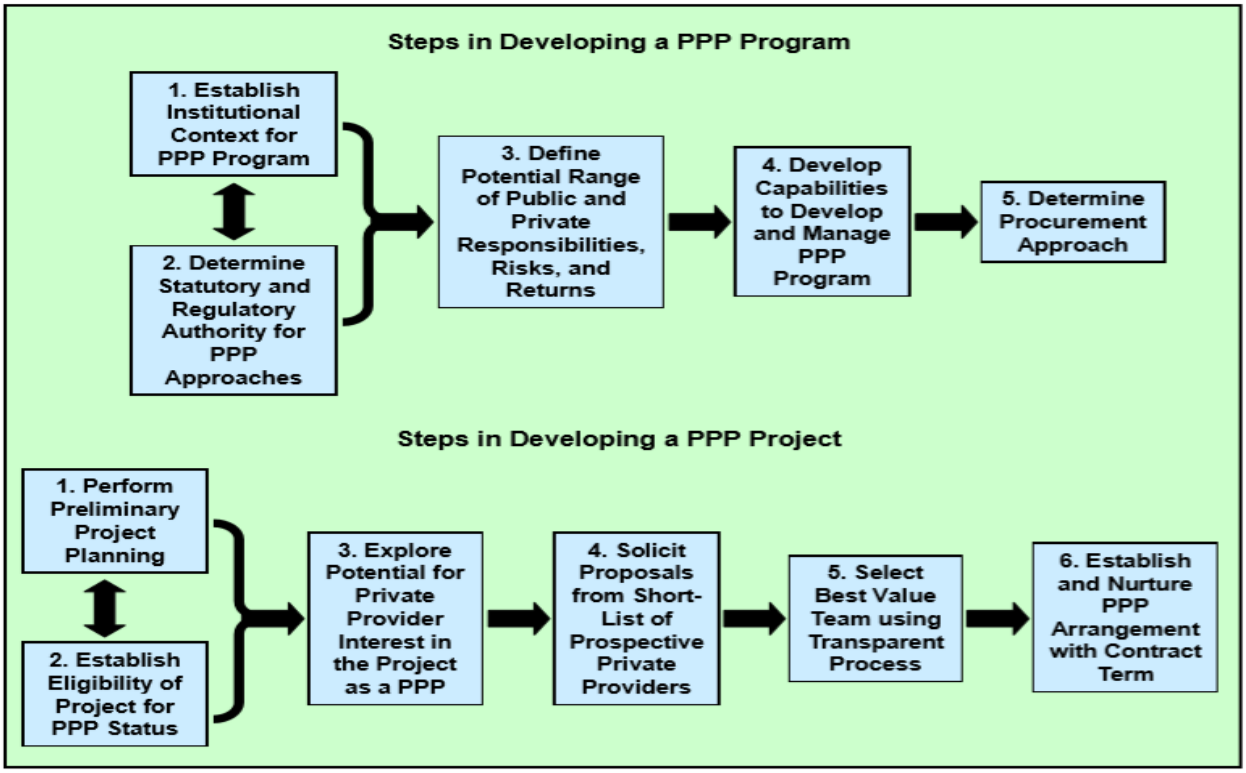
Source: Closing America's Infrastructure Gap: The Role of Public-Private Partnerships- Deloitte research study. [5]

Even though P3's are an effective tool the suitability of P3 to every project needs to be understood by the decision-makers and the implementing organizations. The following aspects can be considered in determining suitability of project for implementation using P3 delivery.[4]

i. Complexity of the development can be managed ineffectively through traditional approach than through well-defined performance requirements.
ii. Lower project delivery time helps in retaining public support and interest by opting alternative project methods.
iii. Significant public funding can be utilized with private investment.
iv. Project gives opportunities for innovation in design, construction, operation, maintenance, or financing of the transportation infrastructure.
v. Reduction in financial deficit for project completion can be achieved through private investment.
vi. Local long-term regional and transportation plans are given consideration and the project has strong political support.

In determining suitability, the implementing organization should be aware and updated of the ability of project to receive considerable private funding. Considering the suitability of P3 for a project the most important and complex part of the P3 implementation is the procurement of project. Every P3 project is unique but includes the following tasks at minimum: [4]

i. **Determining scope of work:** The most important part of the project is setting the goal and scope of work not only for the project but roles and responsibilities to be undertaken by public and private stakeholders.
ii. **Risk assessment, mitigation, and allocation:** Each project being unique the necessity to analyze and allocate risks to stakeholder having greater capability to manage and mitigate risk is crucial in any P3 project delivery.
iii. **Performance requirements:** Unlike the traditional delivery methods, responsibility of efficient lon-term functioning in majority of P3 contracts lies with the private sector and thus P3 contracts should include well defined performance requirements addressing, performance incentives for successful completion of performance requirements.
iv. **Development of terms and conditions:** For P3 procurements, the added uncertainties associated with the P3 project requires sincere effort to develop and manage procurement process and further needs to address complex issues relating to funding and risk allocation, performance requirements.
v. **Selection criteria determination:** P3 projects are complex and require high level of qualification parameters, innovative elements and duration of contract. Determination whether P3 proposers meet responsibility standards is usually done during preliminary phase and is subject to additional review at the proposal phase. Many agencies also include a responsiveness (or compliance) review as part of the proposal evaluation. As is the case for all procurements that involve selection on a basis other than low price, the procurement documents should include clear and well-defined selection criteria and evaluation processes as well as relevant information regarding the process so that proposers understand the rules of engagement.
vi. **Selection and negotiation:** Government agencies in United States prefer using a best value selection process that permits them to consider factors such as the quality of the proposer's team, technical knowledge and expertise, approach to financing, and management approach. It is more common for P3 projects to include a post-selection negotiation phase in the procurement due to the complexity of the project and the need to address issues that only become apparent after review of the proposals
vii. **Financing:** Unlike the traditional project delivery methods P3 procurements involve additional criteria relating to private and government financing that procuring transportation agencies are not acquainted with.
viii. **Capital Renewal:** Many transit P3 projects have contract period more than the expected operational life of certain aspects of the project thus, the replacement and enhancement of such aspects need to be well-defined in the contracts as the private partner is responsible for cost of such enhancement and replacement.



Source: User Guidebook on Implementing Public Private Partnerships for Transportation infrastructure Projects in the United States. [11]

3. CASE STUDY ON P3 PROJECTS

3.1 P3 Projects in USA

There are many examples of successful public-private partnerships in the delivery and operation of transit programs than those have been directly public funded. In most common practice are the projects in which public authorities receive bids from the private sector to design, build, operate and maintain systems and facilities without requesting direct funding. The Hudson-Bergen rail program in New Jersey is one example, and Tren Urbano in San Juan, Puerto Rico is another. In addition, many smaller transit operations have benefited from equipment-leasing programs and from contracting operations and maintenance to private firms. [2] For this case study we studied the following successfully completed transportation and transit projects:

3.1.1 Chicago Skyway: [3]

The Chicago Skyway project comprises of an 8-mile expressway connecting Dan Ryan Expressway in southern Chicago and the Indiana Toll road. A private consortium of Spanish and Australian toll road developers entered into contract with City of Chicago in 2005 to operate and maintain the Skyway for 99 years paying $1.8 billion upfront. The private consortium was also responsible for revenue generation through toll, as a return on initial investment and operation and maintenance of road. The upfront capital paid by the consortium to city was used by city in recovering the development cost of road ($ 463 million) and much of the capital amount ($ 875 million) was put in to reserved funds for future infrastructure development.

3.1.2 Indiana Tollway: [3]

The Indiana Toll road is a highway project connected to Chicago Skyway on one end and Ohio Turnpike on the other. A long-term lease agreement was used for appointment of concessionaire for operating and maintaining of road for 75 years in 2006. The same Spanish and Australian toll road developers managing Chicago Skyway out-performed 10 other proposals in the bidding process for this project. An upfront payment of $3.8 billion was made which was further utilized for development of 200 highway construction projects and 200 highway major preservation projects under a 10-year program called Major Moves. Further, the 7 counties through which the road passes also received $40 million to $120 million for undertaking local transportation projects.

3.1.3 Maryland Purple Line Light Rail Transit System: [4]

The Purple Line in Maryland is another light rail travel framework that runs 16.2 miles in rural Washington, D.C., between Bethesda in Montgomery County and New Carrollton in Prince George's County. The venture was supported to some extent with a Capital Investment Grant (CIG) award and the Federal Transit Administration (FTA). The project motive was significant movement of traffic from vigorously clogged Capital Beltway and give direct associations with four parts of the Washington Metropolitan Area Transit Authority (WMATA) Metrorail framework, just as every one of the three Maryland Area Regional Commuter (MARC) rail lines (connecting Washington, Baltimore, and Frederick, Maryland) and Amtrak's Northeast Corridor. The Maryland Department of Transportation (MDOT) and Maryland Transit Administration (MTA) embraced a joint-sales for an accessibility installment concession for the undertaking, with a 30-year working period.

MDOT/MTA utilized a tradeoff procedure in making the choice assurance and granted the concession contract in mid-2016. The undertaking financing closed in mid-2016, profiting essentially from low loan costs because of good economic situations. The FTA Full Funding Grant Agreement (FFGA) was executed in 2017.

3.2 Other successful P3 projects in USA:

Agency	Project	Description
Arizona Department of Transportation	South Mountain Freeway	Highway DBM project
California Department of Transportation	Presidio Parkway	Availability payment roadway
	SR-91	Express lanes toll concession
City of Los Angeles (Los Angeles World Airports)	Automated People Mover and Consolidated Rental Car Facility	Availability payment
Florida Department of Transportation	Port of Miami Tunnel	Availability payment tunnel
	I-595	Availability payment express lanes
	I-4 Ultimate	Availability payment express lanes
Indiana Finance Authority	East End Crossing	Availability payment toll bridge
New Jersey Transit Corporation	Hudson-Bergen light rail transit system	DBOM transit system (finance component was removed by change order)
Ohio Department of Transportation	Portsmouth Bypass	Availability payment roadway
Pennsylvania Department of Transportation	Rapid Bridge Replacement	Multiple bridge replacements with availability payments
Regional Transportation District (Denver)	Eagle	Commuter rail availability payment P3
Texas Department of Transportation	I-635 (LBJ TEXpress Lanes)	Express lanes toll concession
	SH 288	Express lanes toll concession
	Grand Parkway	Toll road DB project
Virginia Department of Transportation	Transform 66 Outside the Beltway	Express lanes toll concession
	Elizabeth River Tunnels	Connector toll concession

Source: US Public-Private Partnership (P3) Procurement: A Guide for Public Owners, March 2019, US DOT. [4]

3.3 P3 Projects in California:

California has had three transportation Public-Private Partnership projects, two being led by local agencies in the 1990's and Caltrans taking the lead on the latest one, the Presidio Parkway which ended January 2017. California was the first state to use the P3 project delivery method and first got legislative authority to use Public-Private Partnerships (P3) to finance, build and maintain large infrastructure projects in the 1990s. In 1989, the Legislature authorized Caltrans to use P3 arrangements on up to four projects. Caltrans entered into two P3 agreements, one to build toll lanes on State Route (SR) 91 in Orange County, and the second to build SR 1251, which connects the Otay Mesa border-crossing area with the state highway system. Each contract required the private developer to design, build, finance, operate and maintain the facility. [9]

3.3.1 Presidio Parkway:

The Presidio Parkway is a 1.6 mile stretch of Highway 101 through San Francisco, which gives access to the Golden Gate Bridge and Marin County. The venture included development of six traffic paths, extended shoulders, two 1000 feet burrows, and different components. The Presidio Parkway was conveyed in two stages, with the primary stage conveyed through conventional structure offer form beginning in 2009. Stage I was planned to be finished by mid-2011 however experienced measurable delays and cost invades because of progress arranges before its possible fulfillment in June 2013. Caltrans surveyed conveyance choices for Phase II, which included generally twofold the measure of physical development fill in as Phase I. An incentive for profit

viability saw the P3 elective as the most practical. A RFQ for the Phase II P3 was given in February 2010, and a short-rundown of three groups was chosen in October. In January 2011, the venture was granted to Golden Link Partners. The triumphant offer spoke to over 30% cost reserve funds comparative with the proprietor's evaluations. The association has a 33-year term, including three years for development and 30 years for activities and support. All-out capital expense of the task is $365 million financed with 42% TIFIA advances, 45.5% bank advances, and 12.5% value. [10]

3.3.2 The Bay Area Rapid Transit District in California welcomed interest and speculation by the private part into its new association between Oakland Airport and the BART Coliseum Station. [2]

3.3.3 California state partnered with the San Diego Expressway, LP, to develop the SR 125 Toll Road San Miguel Mountain Parkway in San Diego County. The new highway proposed to be built and financed by the private partner and ownership would be transferred to the state after project completion. Through a leaseback, the private partner will operate and maintain the new facility for a 35-year period, after which control reverts to the public sector. [3]

3.4 Ongoing and Proposed P3 major transit and transportation Projects in California

3.4.1 LAX Automated People Mover and Consolidated Rent-A-Car Center: [10]

Los Angeles World Airports (LAWA) as of late arrived at a commercial close on a $4.5 billion, 2.25-mile electric train framework P3 that will interface three stations inside LAX to a merged rental vehicle office and multi-purpose transportation focus with access to the Metro light-rail framework. LAWA published an RFQ in June 2016, shortlisting each of the five groups that reacted at the end of the day accepting offers from three respondents. In mid 2018, LAWA chose for the 30-year contract the LAX Integrated Express Solutions (LINXS) group drove by Fluor, Balfour Beatty, and three other value individuals. Commencing in 2018 and planned to be operational in mid-2023, LAWA will make a progression of achievement installments all through the structure and development forms in addition to accessibility installments over the life of the activities period of the agreement. Installments will originate from a mix of air terminal reimbursement bonds, existing air terminal incomes, and traveler office charges.

LAWA is additionally conveying the Consolidated Rent-A-Car Center (CONRAC) through an open private organization. The evaluated $1 billion office will be found 2 miles east of the air terminal and associated by the APM. Four groups were chosen for the short-list in 2017, and the RFP was given in April 2018. Last choice planned for late 2018, with venture fruition by 2023.

3.4.2 LA Metro: [10]

The Los Angeles Metropolitan Transportation Authority (LA Metro) is in the beginning times of maybe the most aggressive P3 program in the nation. While LA Metro has high-value assets accessible to it with the entry of Measure M—the business charge passed by LA County voters in 2016 that will give $120 billion to travel extends more than 40 years—there are as yet subsidizing requirements, given the size of the district's transportation needs. The staff are starting to recognize ventures for P3 conveyance inside, LA Metro has essentially gone to the private partners with distinguished P3 openings through spontaneous recommendations. LA Metro is at present pushing ahead with two significant tasks for P3 conveyance, the two of which originated from spontaneous recommendations. The West Santa Ana Branch is another 20-mile light-rail venture that would stretch out from Cerritos in southeastern LA district to downtown Los Angeles. The financial backing is $4 billion, and the task was wanted to be conveyed in two stages; in any case, LA Metro accepts that the two stages can be conveyed as one anticipate through a P3. The subsequent task is the Sepulveda Transit Corridor, which tries to add a suitable travel alternative to the vigorously blocked I-405 passage from the San Fernando Valley toward the west side of LA and LAX. LA Metro is analyzing feasibility of different high-limit rail travel alternatives for this task, which is relied upon to cost around $8 billion.

4. BENEFITS OF USING P3'S AS A DELIVERY METHOD

One of the major benefits to P3 project delivery is that multiple options are available for innovation by involving private sector to develop efficient methods to meet desired outcomes and public needs. Further, a primary motivation for a P3 procurement is the utilization of private funding for completion of projects compared to public funding deficit resulting in in-complete projects. Use of a P3 approach helps in enhancing the technical capability and reducing financing deficit by involving

private partners. The participation of private sector can also help increase effective management and innovation, which is pivotal in delivery of complex infrastructure projects.

The benefits of P3's over traditional project delivery methods can be broadly stated as: [5] [6]

i. **Consideration of lifetime project cost:** The entire project life-cycle cost are considered which can help expediting infrastructure projects by years compared with the traditional financing l for infrastructure projects.

ii. **Timely Completion of Projects:** The P3's have strong track record of timely or before time completion of projects as the project delivery risk is usually transferred on the private partner. This results in accelerated completion of projects and an overall benefit to the public.

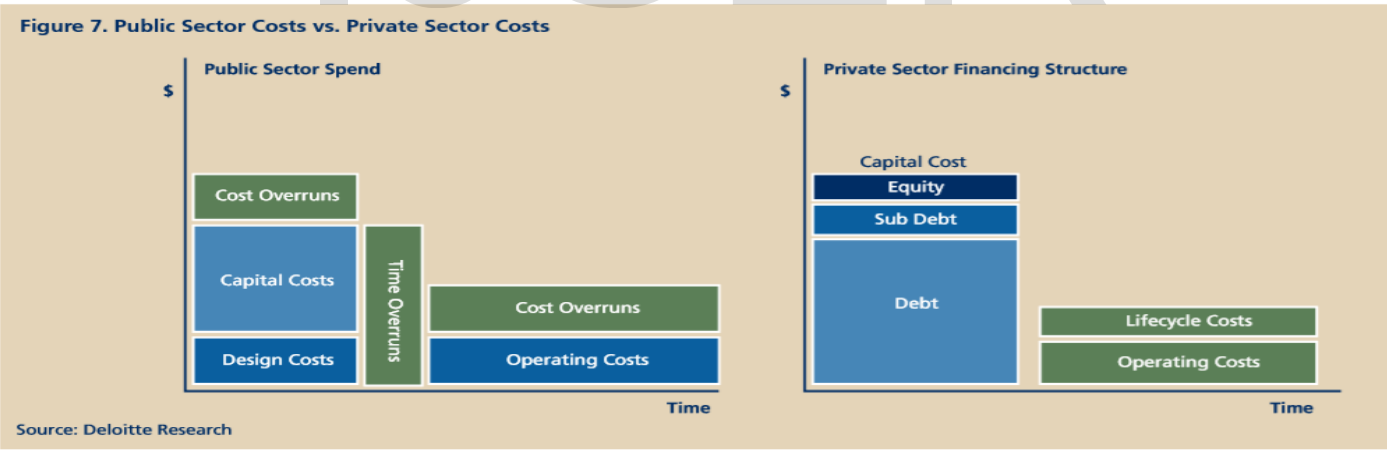
iii. **Lower cost over-runs:** P3's can considerably minimize the cost of infrastructure by lowering construction costs and life-time costs as the risk of financing and cost over-runs is a responsibility of private sector. The private sector approach and on-budget on-schedule delivery of projects gives P3's a major advantage over traditional delivery methods.

iv. **Stakeholder Engagement:** P3 approach mandates the agency to engage all the stakeholders and take feedback on all the risks associated with the project. This approach helps in protecting the greater public interest over private sector return on investments and profits associated with the project.

v. **Increased Operation and Maintenance efficiency:** The operations and maintenance is a major responsibility of private partner in a P3 as the revenue generation and performance based benefits and incentives are a way to secure return on investments. Thus, the efficiency of operations and maintenance is naturally increased considering the greater interest in securing return on investments. Additionally, satisfaction metrics are built into some P3 contracts that encourage a strong customer service orientation on performance evaluation of the private partner.

Based on published studies of the design, construction, and maintenance of social infrastructure projects, such as schools and clinics, in Europe, it is found that the P3 approach can reduce lifecycle cost up to 20 percent compared with the traditional approach. The UK Audit Office found a reduction of 70 percent of project budget overrun counts and 65 percent reduction in project schedule overruns deploying a P3 model.4 An Australian study of 54 projects showed that only 1 percent went over budget; they also beat the schedule on average by 3 percent, while traditional approaches were on average 24 percent late. [7]

The focus in a P3 project delivery is on the final output of the project and not the approach by which the project is implemented the P3's help the public sector to focus on the value of infrastructure created based on set vision and delivery outcomes.



Source: Closing America's Infrastructure Gap: The Role of Public-Private Partnerships- Deloitte research study. [5]

5. RISK AND ISSUES INVOLVED WITH P3'S

While many cities have taken the benefits of P3 arrangements, critics of P3's point to a variety of difficulties that can arise with implementation of such projects. The primary concern is that deals are often very complex, long-term arrangements, which may be a challenge for many agencies to undertake, particularly when dealing with experienced private partners. The negotiation of these transactions often requires the public agencies to obtain expert advice during negotiations which can be expensive and come with the risk that a final deal may never be consummated. Given their additional complexity, these transactions can take longer to negotiate, potentially undermining any scheduling benefits the process might otherwise provide. The agency

implementing P3 need to have clear understanding of the vision and outcome of the project as unrealistic expectations can lead to more lengthy and expensive negotiations and result in frustration on public as well as private party sides. [8]

Some of the common considered risks and issues in implementation of P3 projects are:

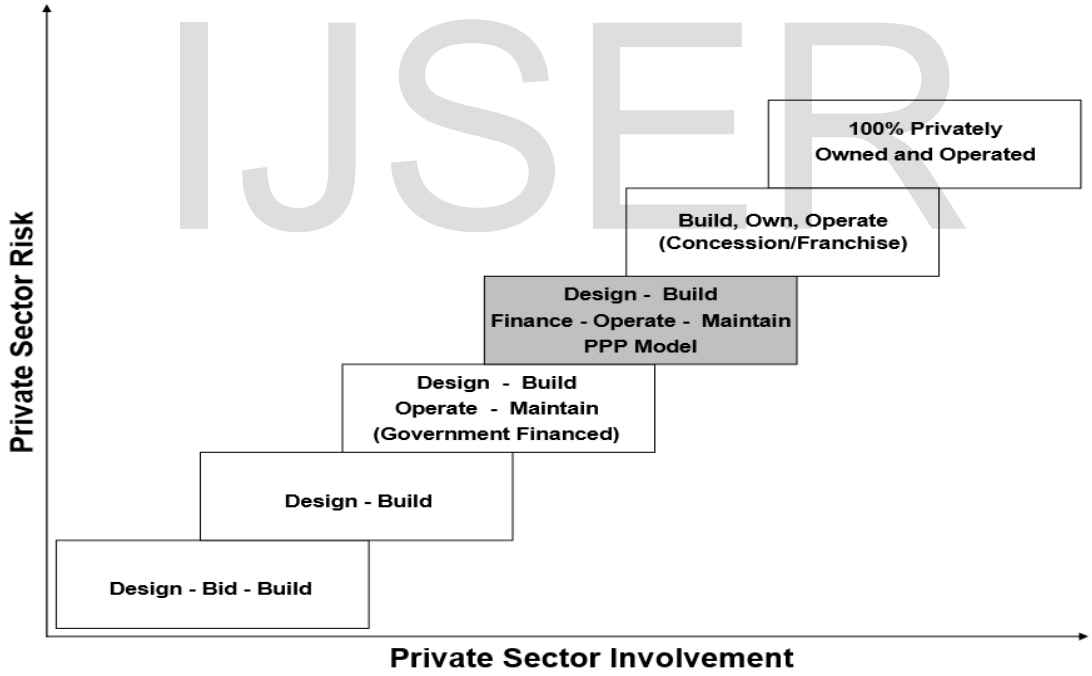
i. **Improper structuring of contract:** The agency implementing a project on P3 should have set objectives, goals and outcomes for the project and should be well defined in the contract as contracts not structured correctly can end up in the public entity getting exposed to unnecessary risk and costs. The risk should be if not equal should be shared with mutual consent and should be well defined in the contract.

ii. **Risks of higher cost of tolls:** One of the disadvantages critics identify is that private owners/ companies responsible for operation of toll roads may charge higher tolls considering the risk in return on investment and the long-term length of lease agreements.

iii. **Labor and Employee Union Opposition:** Some P3 projects have got direct opposition from the labor and employee unions stating that such arrangement of projects will result in either few jobs in the public sector or a reduction in existing jobs. Some also view the P3 delivery method as "out-sourcing" arrangements under which current employees will either lose their jobs or find themselves with inferior working circumstances.

iv. **Private agency failing to operate and maintain:** In some P3 type of contracts the private sector partner may fails to operate and maintain the transit asset then the public sector partner is forced to step in and take-over the project which may be at additional cost using tax payers money.

v. **Long term leases or contracts:** A typical P3 contract is generally for a period of 35, 50 or 99 years with contracts also starting from as short as 5 or 7.5 years. Experts believe that arrangements longer than 50 years can be a risk and would be a commitment on behalf of future generations without understanding the needs of the situation then.



Source: The ABC's of PPP's by Michael N. Conneran, Esq. Hanson Bridgett LLP, City Attorneys Department League of California Cities Spring Conference,2009 [8]

6. OUTCOME OF THE STUDY AND LESSONS LEARNED:

Considering the growing need for infrastructure enhancement and maintenance need across US innovative methods like Public-Private-Partnerships should be implemented more openly by states, counties, cities and federal agencies. Without seeing it merely as a partnership or a different type of transaction implementing agencies can adopt a tailored approach that gives justice to the complexity and outcome of the project. Making the best use of the multiple delivery models that are available and continuing to innovate learning from failure instead of retreating from it—the public sector can take P3 projects to the next stage of development and take a step closer towards meeting the infrastructure deficit.

A wide range of opportunities is available for achieve public interest through partnership between public authorities and private organizations. However, such partnerships cannot substitute the traditional project delivery methods and the necessary role of public policy, public oversight, and public resources in the provision of public transportation services. P3 structures should be structured to increase the benefits of private participation and investment without losing policy control and ownership of the asset.

Based on the study and after understanding the key factors involved following are the lessons learned for a successful P3 project delivery and achieving the broader goal of enhancing the transportation infrastructure:

i. **Stakeholder Engagement:** Stakeholder and decision maker engagement including public consultation should be done at concept stages of the project as conflicts and uncertainty in the procurement and financing phases results in lower private investor confidence further leading to lower likelihood of project success.
ii. **Competitive Procurement Process:** For transit and transportation projects a strong competition and transparency during procurement phase is important to optimizing the public subsidy and generating greater quality as well as cost efficiencies and to achieve value-for-money for the taxpayer
iii. **Approvals:** Public sector partner taking the responsibility of obtaining major approvals, environmental assessments and approvals and pre-development approval and show seriousness of the public partner in the project and generates greater confidence among the private sector to invest and participate in the project.
iv. **Government Framework:** A major recommendation by experts is that the governments need a clear framework for partnerships that confers adequate attention on all phases of a life-cycle approach and ensures a solid stream of potential projects. Federal policies encouraging such partnerships can be accompanied with tax incentives, innovative revenue generation opportunities like advertisement and other methods of favorable treatment that enhance the attractiveness of such private investment. This can help overcome existing issues in the P3 framework, lack of clarity about outcomes and inadequate government capacity to manage the process.
v. **Value Capture:** A very important recommendation by experts is that in addition to providing higher-quality infrastructure at lower cost, governments can use P3 transactions to create value from undervalued and underutilized assets, such as land and buildings, and use those funds to help pay for new infrastructure. [5] Multi-modal transit hubs and integrated transit stations on government reserved lands developed on a P3 model can help facilitate Transit Oriented Developments (TOD) thus increasing the face value of the neighboring areas and can motivate the private investors to invest in such projects.
vi. **Capacity Building:** P3s are complex in implementation than the traditional project delivery methods and public agency opting a P3 delivery need to understand the technical, financial and all the other aspects of the project over entire life cycle of the project. The agencies need to build capacity and have detailed understanding and knowledge for the implementing teams and officials to have a complete understanding of P3 delivery for major infrastructure projects.

To conclude the decision makers and public agencies should embrace strategies for management of entire life cycle of infrastructure assets, take into consideration long-term project functioning in the preliminary budgeting, and that the current investments will contribute to the changing ecosystem The greater challenge for the public agencies is not to achieve greater private-sector involvement, but instead to achieve maximum public benefits and need accomplishment for each dollar invested. Public-private-partnerships is not the only answer, but wherever suitable it is an effective tool through which the public and the state can seek important long-term benefits. In the time to come public and private sectors can engage into effective and strong partnerships to enhance the infrastructure needs in a timely and cost-effective manner. This will require a major shift across the entire ecosystem, but surely a change worth embracing.

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