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PUBLIC-PRIVATE PARTNERSHIPS (P3s) IN THE U.S., OBSERVED OBSTACLES TO ITS ADOPTION, AND POTENTIAL SOLUTIONS TO OVERCOME THE CHALLENGES

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Abstract: A well-developed infrastructure system is crucial to the health of a nation's economy. The ASCE's 2017 Infrastructure Report Card rated America's infrastructure at a D+ and highlighted the dire need for infrastructure investment in the U.S. According to the report card, the 10-year investment gap that must be bridged in order to achieve an infrastructure system fit for the 21st century is close to \$2.0 trillion. The inability of government funding to bridge this investment gap, explains the recent growth in the market for public-private partnerships (P3s) in the U.S. P3s refer to contractual cooperation between public agencies and private entities to design, construct, finance, operate and maintain a facility or infrastructure. While other nations including the UK, Canada and Australia have highly utilized private financing and expert input to improve and update their infrastructure, the U.S. is behind the curve when it comes to adoption of P3s. This paper presents result of an extensive literature review on P3s in the U.S. and interviews with experts in the industry. The paper addresses the suitability of P3s in supplementing the conventional government efforts in rebuilding the U.S. infrastructure. The paper also discusses the main obstacles to adoption and successful implementation of P3s in the U.S. and proposes ways to overcome the obstacles and successfully execute P3s.

1 INTRODUCTION

Since 1998, the American Society of Civil Engineers (ASCE) has been publishing the Report Card on America's Infrastructure. This report card, published every four years, portrays the condition and performance of the nation's infrastructure, assigning letter grades based on the physical condition and needed investments for improvement. The 2017 report card rated America's infrastructure at a D+ and highlighted the dire need for infrastructure investment in the U.S. According to the report card, the cumulative infrastructure investment need between 2016 and 2025 is estimated to be \$4.59 trillion. With an estimated funding of \$2.526 trillion over the same period, the 10-year investment gap that must be bridged in order to achieve an infrastructure system fit for the 21st century is over \$2.0 trillion (ASCE 2017).

The need for an infrastructure system fit for this generation calls for innovative solutions. Potential solutions to raising the infrastructure condition over the next few years have been proposed by lawmakers, industry professionals and other scholars. The ASCE (2017) recommends increasing investment from both the government (all levels) and the private sector, promoting smart investments through proper leadership, planning and having a clear vision for the nation's infrastructure, and utilizing new approaches, materials, and technologies to ensure that the nation's infrastructure is more resilient and sustainable. While

increasing investment is seen to be a key ingredient in any proposed plan for improving our infrastructure, budgetary constraints limit the ability of the local and Federal government to bridge the gap. On the other hand, public demands have not subsided, quite on the contrary, they have intensified and public agencies are facing a growing scarcity of both human and financial resources (Roman 2015). In the past few years, Congress and some other States have made efforts to invest more in infrastructure, but these efforts fall short of the \$2.0 trillion that is needed. It has become quite clear that traditional financing sources, such as fuel taxes, are no longer adequate to satisfactorily address existing infrastructure needs (Page, et al. 2008). The inability of government to meet infrastructure financing needs highlights the necessity of exploring alternative funding sources. One of the things that need to be done is to identify a pipeline of infrastructure projects attractive to private sector investment and public-private partnerships. The path forward calls for cooperation between the private and public sectors to ensure all investments are spent wisely, prioritizing projects with critical benefits to the economy, public safety, and quality of life, while also planning for the costs of building, operating, and maintaining the infrastructure for its entire lifespan (ASCE 2017).

While P3 has been embraced in Canada, Australia, Europe, as well as many parts of Africa and Asia, the United States has been relatively slow to adopt it (Geddes and Reeves 2017). With the U.S. facing increasingly constrained budgets, a large and growing deficit, and an inability to generate additional revenues, partnerships with the private and non-profit sectors seem to be the logical path forward. However, as earlier mentioned, P3 adoption in the U.S. has been slow. The available literature on P3s in the U.S. was studied and the obstacles to its adoption were highlighted. Solutions to some of these obstacles are also discussed.

2 PUBLIC-PRIVATE PARTNERSHIPS

The United States Department of Transportation (U.S. DOT) and the National Council for Public-Private Partnerships (NCPPP) define Public private partnerships (P3s) as contractual agreements between a public agency (Federal, State or local) and a private entity that allow for greater private participation in the delivery of projects. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility. In transportation projects, the arrangement typically involves the private sector taking on risks associated with design, construction, finance, long-term operation, and traffic revenue (NCPPP 2017) (U.S. DOT 2018). There are many alternative terms used across the globe to refer to public-private partnerships. Some of the terms identified by Babatunde, et al. (2014) include: Private Finance Initiative (PFI), a term used in Britain, Japan and Malaysia; Private Participation in Infrastructure (PPI) and Private-Sector Participation (PSP), terms almost exclusively used in the development-financing sector; P3,3Ps or P³, which are used in North America; and Privately-Financed Projects (PFP), which is used in Australia.

As societies grow, the global market gets more competitive, and governments face greater fiscal and environmental challenges. It is not only expedient, but imperative, that the private and public sectors work collaboratively in building, operating, and maintaining a nation's infrastructure. Early and significant involvement of the private sector in a project can bring creativity, efficiency and capital necessary to address complex infrastructural problems facing state and local governments (Federal Transit Administration 2018).

There are numerous opportunities for private entities to partner with public agencies on infrastructure improvements, ranging from being independent contractors in a traditional delivery system to a public-private partnership, where the private firm participates in the design, building, finance, operation, and maintenance aspects of a project (Federal Transit Administration 2018). Figure 1 shows the spectrum of private sector involvement in infrastructure projects. Private sector involvement progressively increases as you move from the traditional design-bid-build (BDD) to complete privatization or build-own-operate (BOO) (Page, et al. 2008). While the public agency owns most of the risk in the conventional BDD, this risk is progressively transferred to the private entity as you move from the traditional project delivery to full privatization. P3s are structured with long-term, integrated contracts that enable the transfer of risks (at a cost) from the public agent to the private company when the private entity is better placed to manage the risk (Boothe, et al. 2015).

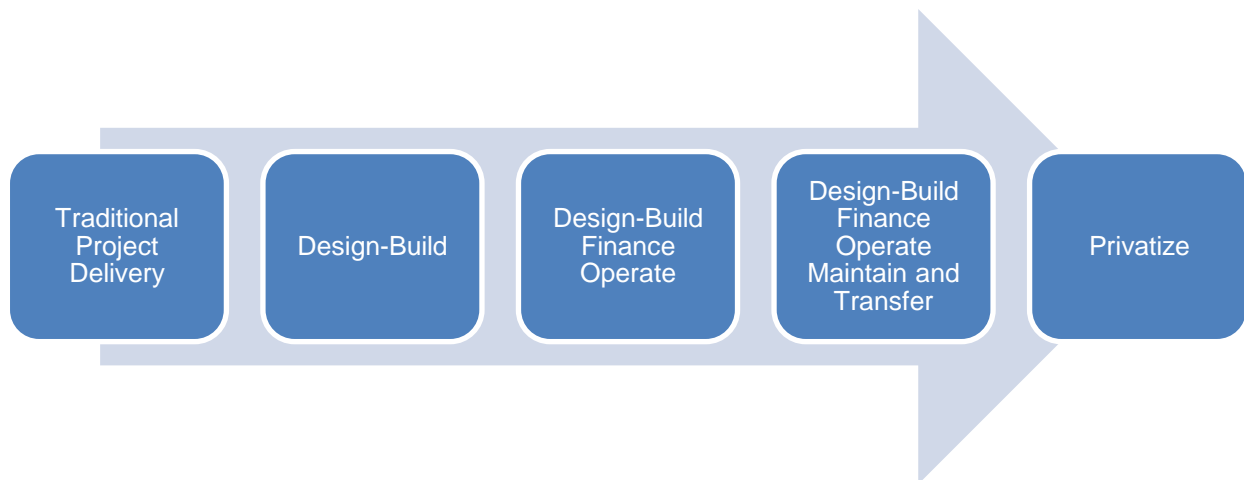


Figure 1: Range of P3 Projects (AGC of America 2018)

P3s have been extensively implemented internationally especially in Europe. Between 2010 and 2018, Europe had an annual average of 73 public-private partnership projects that reached financial close and cost an annual average of €15.6 billion **Error! Reference source not found.** (European Investment Bank 2019). In Canada, all levels of government have increasingly embraced public-private partnerships (PPPs) as their preferred approach to deliver large-scale public infrastructure (Siemiatycki 2015). Adoption of P3s has also been observed in Australia, China, India, Japan and increasingly in most of the developing nations like Kenya, Bangladesh, Pakistan, Ghana and Nigeria.

2.1 Types of public-private partnerships

The structure of the contract between the government and private entity in a P3 can take different forms because the agreements are typically tailored to the objective of the project. The different types of P3s have varying degrees of private-party involvement in the project and varying degrees of risk that the private party takes. Here is a summary of some of the main types of public-private partnerships as defined by Florey (2013), U.S. GAO (1999) and Perez, et al. (2016)

- *Build-Operate-Transfer (BOT) or Build-Transfer-Operate (BTO)*. Under this arrangement, the private partner builds a facility to the specifications agreed to by the public agency, operates the facility for a specified time period under the contractual agreement with the agency, and then transfers the facility to the agency at the end of the specified period. The contract period should be long enough to enable the private partner to realize a reasonable return on its investment through user charges.
- *Lease-Develop-Operate (LDO) or Buy-Build-Operate (BBO)*. Under the LDO or BBO partnership arrangement, the private party leases or buys an existing facility from a public agency; invests its own capital to renovate, modernize, and/or expand the facility; and then operates it under a contract with the public agency. Under this arrangement, the private partner makes the necessary improvements to the facility to make it functional and profitable.
- *Design-Build-Finance (DBF)*. Under DBF, one contract is awarded for the design, construction, and full or partial financing of a facility. Responsibility for the long-term maintenance and operation of the facility remains with the project sponsor who can defer paying all or a part of the cost of the project during construction.
- *Design-Build-Maintain (DBM)*. Under this arrangement, the private partner is responsible for designing, building and maintaining the facility for some period. However, the public sector partner still owns and operates the assets.

- *Design-Build Operate (DBO)*. Under this arrangement, a single contract is awarded to the private partner for the design, construction, and operation of facility or capital improvement. Combining all three phases maintains continuity of private involvement and facilitates private-sector financing of public projects supported by user fees generated during the operations phase.
- *Design-Build-Operate-Maintain (DBOM)*. Under this arrangement, the private party is responsible for the design, construction, operation and maintenance while the public party is responsible for securing the required financing. The public agency also maintains ownership and retains a significant level of oversight of the operations under the contractual agreement.
- *Design-Build-Finance-Operate-Maintain (DBFOM)*. Under this approach, the private party shoulders the responsibilities for design, construction, finance, operations and maintenance. DBFOMs are either partly or wholly financed by revenue streams generated by the project. Direct user fees (tolls) are the most common funding source. Future revenues are leveraged to sell bonds or other secure loans that provide upfront capital for development. DBFOMs are also often supplemented by public sector grants in the form of money or contributions in kind, such as right-of-way. Private partners may be required to make equity investments as well.
- *Design-Build-Finance-Operate-Maintain-Transfer (DBFOMT)*. The Design-Build-Finance-Operate-Maintain-Transfer (DBFOMT) partnership model is the same as a DBFOM except that the private sector owns the asset until the end of the contract when the ownership is transferred to the public sector. DBFOMT is not often used in the United States.
- *Developer Financing*. Under this arrangement, the private party (usually a real estate developer) finances the construction or expansion of a public facility in exchange for the right to build residential housing, commercial stores, and/or industrial facilities at the site.

2.2 Benefits of public-private partnerships

As discussed earlier, the poor condition of our infrastructure calls for significant investment in these developments. Investing in infrastructural development also has the benefit of boosting the economy of the state. Proponents argue that with P3 as a procurement method, the tax payer and the private entities get a lot of bang for their buck. Benefits of P3s to the taxpayer, the public and private partners are well documented. Following are some of the advantages identified by Roman (2015), Florey (2013), Tang, et al. (2010), AGC of America (2018) and the U.S. DOT (2004).

- P3s provide access to alternative financing sources that can facilitate the construction of projects that might otherwise have been delayed or not built at all. As a result, P3s allow the government to spread the costs of investment over the lifetime of the asset with potential for reduction of lifecycle cost.
- P3s have a track record of on-time and on-budget delivery. Speedy or timely completion of a project also affords public safety benefits and social cost benefits like minimal public inconvenience and traffic disruption.
- P3s facilitate better risk management in construction projects by enabling allocation of risks to the party best able to manage the risk. For example, the risk of cost overrun due to inefficient work practices may best be handled by the construction contractor while the risk associated with land use can best be handled by the government. The transfer of some risks to the private sector also incentivises them to properly manage the project. Risk sharing between the private and public partners is common in P3s as well.
- P3s lower the cost of infrastructure to the public entity by reducing both construction and overall life-cycle costs. In some cases, the government can fund the project by revenue streams generated by the improvement, such as tolling.

- P3s most often involve a design-build component with performance-based specifications, which encourages increased innovation as the private sector is obligated to focus on the outcome. Innovative ways to manage projects can also result in access to alternative funding and project efficiencies that will result in significant time and cost savings.
- P3s transfer most of the public agent's responsibilities to the private party allowing the public agent to concentrate on its core competencies (facilitator and regulator) and not rely on its own resources for unfamiliar projects. Government assets, data and intellectual property can be utilized more productively, which leads to substantial improvement in the quality of public facilities and services.
- P3s reduce the levels of politicization in decision making on these massive, and often, highly-complex construction projects. Since much of the decision making in P3s is shifted to the private partner, the design and construction processes can bypass much of the political maneuvering that projects entirely within the scope of the public agency must be exposed to.
- P3s also promote the proper use of private sector skills, experience, technology and innovation, which results in delivery of public services in a more satisfactory manner. The private partner sector brings commercial disciplines to public projects, which drastically reduces the risk of cost overruns and project delays.

2.3 Drawbacks of public-private partnerships

While P3s offer a lot of benefits, some of which are discussed here, there are risks and disadvantages that are involved with public-private partnerships. Some of these drawbacks are discussed below.

- Public-private partnerships do not always create time savings and they do not always result in cost savings. U.S. DOT (2004) highlight some instances where P3s resulted in cost overruns including Florida's use of innovative contracting, and Washington State's first design-build project, the SR 500 Thurston Way Interchange, in Vancouver, Washington. The actual design-build project costs for the SR 500 Thurston Way Interchange were approximately 23% more than the estimated costs for the project under the traditional design-bid-build method.
- Design-build and similar procurement methods that afford shortened schedules and give the design builder significant control over the project could potentially lead to lower quality in the finished product because the public sector partner typically has less of an opportunity to design and inspect the project (U.S. DOT 2004).
- Given the long-term nature of P3 projects and the level of complexity involved, it is impossible to account for all the unanticipated eventualities as the project progresses. When such unanticipated issues and events occur, the parties may be forced to renegotiate the terms of the agreement to the detriment of one of the parties or both (World Bank Group 2016). If the contingencies are significant, the only recourse may be to terminate the contract before it is completed.
- Opponents argue that P3s stifle competition and, as a result, the tax payer does not get the best deal from the investment. When you consider these massive infrastructure projects, it is impossible for small and middle-sized companies to compete for them because they lack the financial muscle to successfully handle projects of that magnitude. When the project is built using the conventional delivery method, the public agency can break down massive projects to multiple smaller projects that can then be competitively bid on by small, medium and large companies, potentially giving the tax payer greater value for their money.
- State procurement laws that have been in place for a long time restrict the use of P3s. This new approach to procurement necessitates a change in the conventional orders which creates significant challenges to both the public and private sector partners. States using public-private partnerships have experienced an initial sharp increase in workload as they adapt their procedures for guaranteeing the timeliness, efficiency, and safety of a project to fit the unusual requirements

of public-private partnerships (U.S. DOT 2004). This has a negative effect on the efficiency of both the public and private partners and could translate into cost and time overruns.

- The public generally view roads as free public amenities that have been paid for through Federal and State gas taxes, as well as other fees. As a result, they naturally resist toll projects and the introduction of tolls on pre-existing tax-supported roads. This has a negative effect on the projected usage of toll roads as travellers seek to avoid using them. If the projected usage is not met, the revenues from these investments may not be adequate to pay off the debt on the project (U.S. DOT 2004). There is a cost attached to debt. And while the private sector can provide capital for a project, there is an expectation of some guarantee that the project will provide a return on the investment (World Bank Group 2016).

3 PUBLIC-PRIVATE PARTNERSHIPS IN THE UNITED STATES

3.1 Historical Development of P3s in the U.S.

The American capitalist system is a mixed economy with the public and private sectors contributing to building the infrastructure through private-public relationships. While the private sector has dominated, the public sector has lent key support through establishing a legal system, encouraging banking expansion, and offering direct and indirect subsidies to speed up development (Childs 2017).

During the youthful years of the United States, much of the infrastructure including ports, ferries, bridges, transcontinental railroads, trolleys and cable car systems, and local water systems were almost exclusively private endeavors but only required government charters. In the 19th century this began to change as government invested more in infrastructural development. About 50 percent of interstate railway investments in the 19th century came from the Federal Government in the form of land grants. Most of the private capital came from the U.K. (Childs 2017). In the past one hundred years, the public sector has largely assumed the role of planning, financing and executing large municipal and infrastructure projects to support our growing economy. The massive public works projects of the 1930s (Works Project Administration) and the Interstate Highway System, officially the Dwight D. Eisenhower National System of Interstate and Defense Highways created after world War II, are two major examples of massive public infrastructure spending. Along with this transformation, the concept of public projects being entrusted to government oversight evolved (Smith, Currie and Hancock 2015).

The great recession of 2007, the massive debt crisis (U.S. debt now exceeds \$22 trillion), an aging and crumbling infrastructure, and the increasing demand for infrastructural expansion has occasioned the shift back towards a mixture of private and public financing, especially for many of the larger public projects (Smith, Currie and Hancock 2015). This mixed approach to financing, part private and part public, has worked well over the course of American history and in areas where it has been appropriately employed (Childs 2017).

3.2 Need for P3s and its adoption and use in the US

The need for increased investment in the U.S. infrastructure cannot be overstated. According to the Congressional Budget Office (CBO), the Federal, State and local governments spent about \$ 440.5 billion on transportation and water infrastructure in 2017 (see Figure 2). The ASCE (2017) report card on the U.S. infrastructure noted that congress and the states must invest an additional \$206 billion each year to raise the overall infrastructure grade and maintain our global competitiveness. This investment need is not feasible, and it calls for more innovative solutions to financing the infrastructure development.

P3s have been extensively implemented internationally, especially in Europe. Of all highly developed nations, the United States is among those in the earliest stages of public-private partnership implementation. The Build America Bureau encourages the consideration of P3s in the development and delivery of transportation improvements citing that early involvement of the private sector can bring innovation, efficiency, and capital to address complex transportation problems facing state and local governments (U.S. DOT 2018).

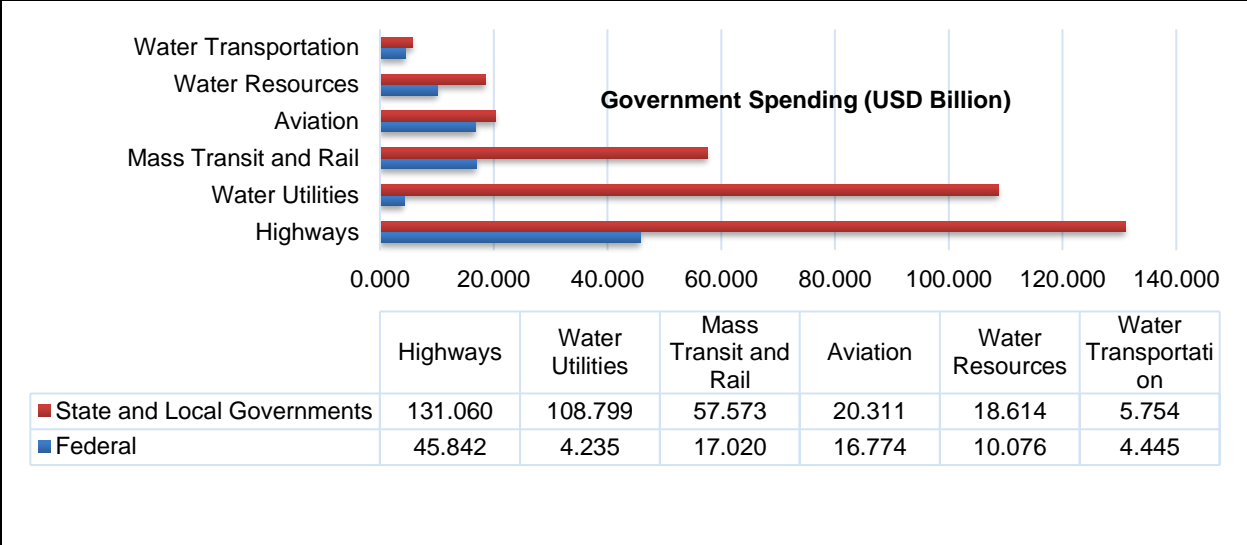


Figure 2: Government Spending on Transportation and Water Infrastructure, 2017 (CBO 2018)

4 DISCUSSION ON CHALLENGES TO ADOPTION OF P3S IN THE U.S. AND POTENTIAL SOLUTIONS

4.1 Challenges/barriers to adoption of P3 in the US

4.1.1 Traditional procurement laws.

The principal barriers to P3 projects have been traditional state and local procurement statutes that require the award of a project to the lowest responsive and responsible bidder after competitive bidding. Subjecting government projects to competitive bidding is how the government agencies protected the public trust and public dollar (Smith, Currie and Hancock 2015). The current procurement laws were written for execution and management of projects where the state bears all the financial burden and the project is delivered using the traditional project delivery system (design-bid-build or DBB). DBB requires complete design with approved drawings and specifications prior to the bidding process. Following a competitive bidding process, the construction contract is awarded to the contractor who submits the “lowest and best” or “lowest responsible and responsive” bid. The long-term operation costs are ignored in this process. While they were not designed to prevent P3 projects, statutes requiring approved plans and specifications prior to award of a construction contract are a barrier to project delivery using P3 (Smith, Currie and Hancock 2015).

4.1.2 Private-sector concerns

The private party’s concerns can affect the ability to form a public-private partnership. Every for-profit entity weighs the financial viability of an investment before committing to it. To attract private investments requires the prospect of enough revenue to pay back the financing and make a profit. For highway projects, tolls or other user fees are estimated to determine if they will generate enough revenue to justify the investment. However, there is no guarantee that the projected revenues will be realized, and this is concerning to private investors. Other uncertainties that the private investor grapples with include the unpredictability of the business market, potential changes in procurement laws, changes in other laws that could affect the business, failing to obtain the necessary permits, or facing prolonged delays due to an uncertain and inefficient permitting process (Kline 2017). Additionally, there are cases where acquiring land for the right-of-way can be very difficult, unreasonable, or even impossible (U.S. DOT 2004). And while the government has eminent domain rights, there are instances where exercising that right may be costlier politically than local officials are willing to bear.

4.1.3 Political obstacles.

A lack of understanding on how P3s work and the fear of public opposition especially when financing of P3s involves tolls or other form of charge on the users, may lead law makers to oppose P3s and the passage of P3-enabling legislation. Some government agencies are also resistant to change that involves embracing new project delivery approaches. All this creates a level of uncertainty over political support necessary to advance P3s, which is a great concern to private investors willing to finance public projects.

4.1.4 Taxpayer Opposition

Oftentimes the taxpayer views some P3 alternative financing structures as additional charges on facilities that have been already paid for through taxes and other applicable fees. For highway P3 projects, a common type of alternative financing is tolls. Generally, the public resists toll projects and opposes the tolling of pre-existing tax-supported roads because they view the roads as "free" and believe that the construction and maintenance of these roads has already been paid for through Federal and State gas taxes, as well as other fees (U.S. DOT 2004).

4.1.5 Federal financing and contracting regulations

An overwhelming majority of the Nation's roads are owned, operated, and maintained by State and local governments. However, a substantial source of funding for highway construction is from Federal government through grant funding or credit assistance. In 2017, about 26% of government spending on highways, amounting to \$45.842 billion, came from the Federal government. For all projects that receive Federal funding, the Federal government imposes some regulations that impede the formation of public-private partnerships. These include: (1) limitations on tolling; (2) issuing tax-exempt bonds only for projects that are owned and operated solely by State and local governments (not private companies); (3) requirements imposed on Federal funding programs which make it difficult for private entities to obtain Federal funding; and (4) limitations on commercialization of the highway right-of-way. Commercialization is attractive to private investors and the limitations dissuades them from getting into P3s (U.S. DOT 2004).

4.2 Potential Solutions

4.2.1 Modification of the state procurement laws

Eliminating barriers that traditional procurement statutes pose is key to success of P3s. Progressively, these barriers are being dismantled across the country by statutory authorizations that encourage private parties to compete for long-term public service projects. These statutes enable the private sector to invest directly into government properties and provide services to the public that are traditionally performed by government employees. These statutes, typically described as enabling legislation, have been introduced in most states as shown in Figure 3. The passage of enabling legislation is an effort by these states to create the right climate to attract, encourage, and facilitate the participation of the private sector in the development, financing, and operation of public-private transportation projects (U.S. DOT 2004).

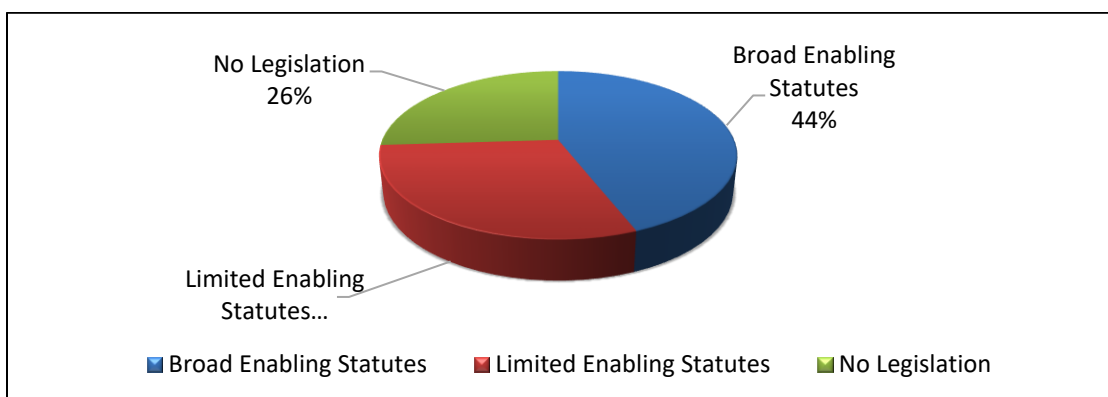


Figure 3: Proportion of States with Enabling Statutes for P3s (FHWA 2018).

Broad enabling statutes are those that authorize several agencies and/or several eligible projects, while limited enabling statutes are those that are written for specific projects and/or limited to eligible projects or select agencies.

4.2.2 Streamlining Federal environmental permitting process

The current environmental review process is one of the main obstacles to private sector participation in the development of transportation projects. A good example is the South Bay Expressway project in California. The environmental clearance process was viewed as the greatest threat to the success of that PPP project. Streamlining the permitting process to reduce the level of uncertainty and delays prevalent in the current system will make investing more attractive to private companies. To effectively streamline the process, the Federal agencies would need to partner with the private sector in developing a coordinated streamlined review strategy that considers the schedule and cost of project delivery (U.S. DOT 2004).

4.2.3 Creating awareness and educating the public

As mentioned earlier, the taxpayer views some P3 alternative financing structures as additional charges on facilities that have been already paid for through taxes and other applicable fees. The main reason for this mindset is a lack of understanding on increased investment needs and the inability of the Federal, State and local government to meet this need. There is also a lack of understanding and misconceptions about what P3s are, how they function, and their benefits to the taxpayer. Consequently, there is a need to educate the public on these issues and create awareness about the dire state of our infrastructure and the need for increased investment from the public and private sectors.

4.2.4 Reforming Federal financing regulations

P3s offer financial flexibilities that enable execution of projects that would have otherwise been extremely difficult or impossible to construct. To take advantage of this procurement method, many states have instituted P3 enabling statutes and the Federal government has taken steps to facilitate the use of P3s through various programs including Transportation Infrastructure Finance and Innovation Act (TIFIA) program, state infrastructure banks (SIBs), and Private Activity Bonds (PABs).

5 CONCLUSIONS AND RECOMMENDATIONS

The U.S. economy operates and thrives on the foundation of a vast network of infrastructure ranging from a complex system of roads and bridges, to rails and ports, to internet and electrical grids. However, the state of the U.S. infrastructure is wanting and in dire need of massive financial investment from both the private and public sectors. Public-private partnerships offer financial flexibilities that enable government agencies to construct projects that would have otherwise been extremely difficult or impossible to construct. While P3 has been embraced in Canada, Australia, Europe, as well as many parts of Africa and Asia, the United States has been relatively slow to adopt it. There have been barriers to its adoption including traditional procurement laws, private-sector concerns, political obstacles, taxpayer opposition and federal regulations. Solutions to overcoming these obstacles include passage of P3 enabling legislation, creating awareness and educating the public, and reforming federal environmental and financial regulations. Successful and unsuccessful P3 projects in the U.S. should be studied and analysed in order to determine the challenges that were faced and, in the case of successful P3 projects, how those challenges were overcome. A study of this nature would be very beneficial to agencies across the nation that are considering the use of P3s.

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