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Closing America's Infrastructure Gap: The Role of Public-Private Partnerships

A Deloitte Research Study

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Executive Summary

Citizens across America confront the nation's glaring infrastructure deficit daily. Evidence of the large and growing gap between infrastructure needs and the resources that governments have historically invested in meeting those needs is everywhere: congested roads; bridges in need of repair; poorly maintained transit systems; and deteriorated schools and waste treatment facilities all in urgent need of rehabilitation and repair. These problems in turn impose huge costs on society, from lower productivity to reduced competitiveness to an increased number of accidents.

Less well understood is the revolution taking place in the way that governments are trying to narrow the infrastructure deficit. Increasingly governments around the world and state and local governments in the United States are turning to the private sector for financing, design, construction, and operation of infrastructure projects. Once rare and limited to a handful of jurisdictions—mostly overseas—and infrastructure sectors, these public-private partnerships (PPPs) have emerged an important model governments use to close infrastructure gaps (see figure 1).

The United Kingdom has pioneered the trend. Through its Private Finance Initiative (PFI), the UK government makes use of partnership models to develop and deliver all manner of infrastructure, from schools to defense facilities.¹ PFI projects now represent between 10 and 13 percent of all UK investment in public infrastructure, a sea change from a little more than 10 years ago when PPPs were barely a blip on the radar screen.²

One offshoot of the rapid worldwide growth of public-private partnerships for infrastructure is that countries remain at vastly different stages of understanding and sophistication in using partnership models. In the US, most states and localities are still at the first stage of PPP development: designing the policy and legislative framework that enable successful partnerships, getting the deals right, building the marketplace, and so on. Being a latecomer to the PPP party can have its advantages, provided the right lessons are learned from the trailblazers overseas—and to some extent, here in the US—who have moved to more advanced stages. Meanwhile, states that are higher up the maturity curve could benefit from a deeper understanding of the challenges and potential solutions particular to each infrastructure area.

Benefits of PPPs. Public-private partnerships are unlikely to fully replace traditional financing and development of infrastructure, but they offer several benefits to governments trying to address infrastructure shortages or improve the efficiency of their organizations.

First, public-private partnerships allow the costs of the investment to be spread over the lifetime of the asset and thus can allow infrastructure projects to be brought forward by years compared with the pay-as-you-go financing typical of many infrastructure projects. Second, PPPs have a solid track record of on-time, on-budget delivery. Third, PPPs transfer certain risks to the private sector and provide incentives for assets to be properly maintained. Fourth, public-private partnerships can lower the cost of infrastructure by reducing both construction costs and overall life-cycle costs. Fifth, because satisfaction metrics can be built into the contract, PPPs encourage a strong customer service orientation. And finally, because the destination, not the path, becomes the organizing theme around which a project is built, public-private partnerships enable the public sector to focus on the outcome-based public value they are trying to create.

Getting It Right. While PPPs hold significant benefits, they also present formidable challenges, both at earlier and later stages of market development. A big part of moving up the maturity curve entails improving government capacity to execute and manage innovative partnerships. Lessons learned from PPP leaders worldwide suggest several strategies for successful execution of PPPs.

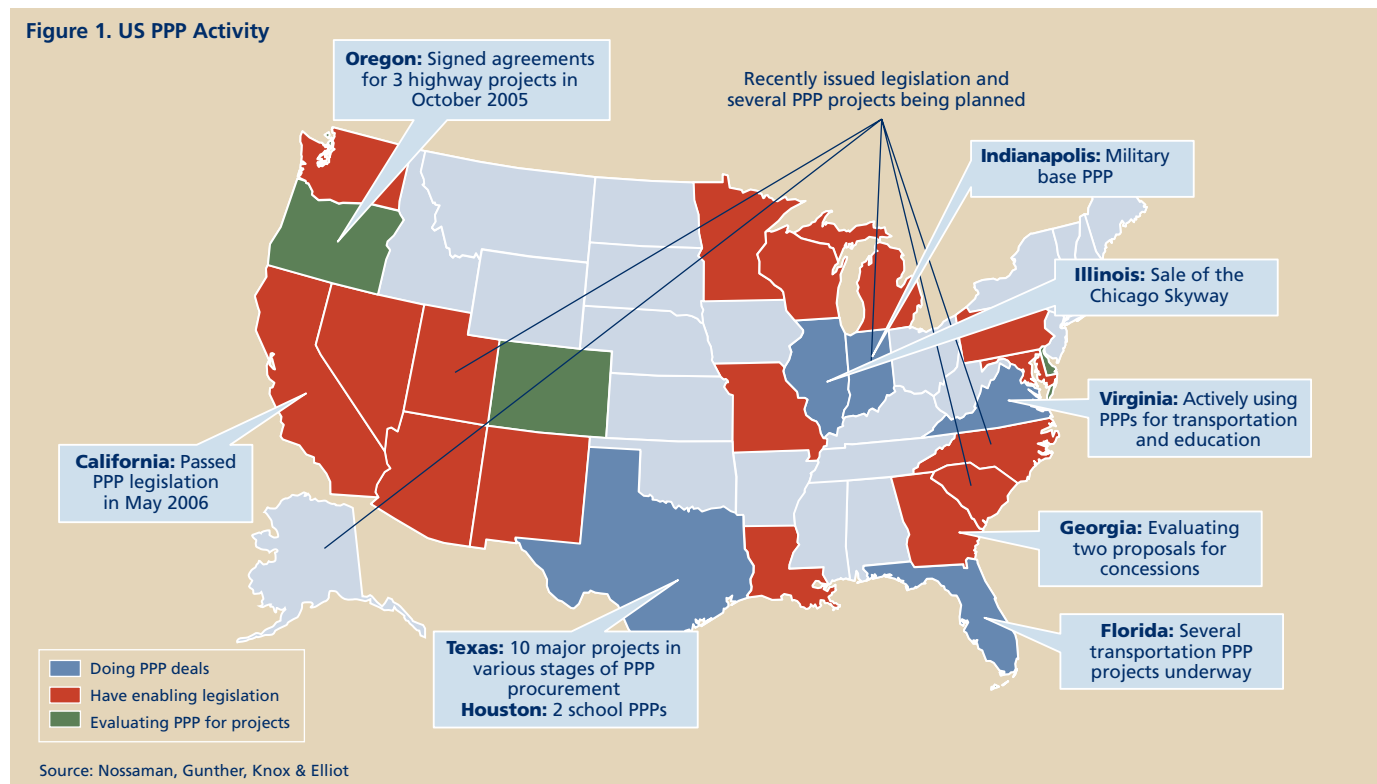
First, governments need a clear framework for partnerships that confers adequate attention on all phases of a life-cycle approach and ensures a solid stream of potential projects. This can help avoid problems of a poor PPP framework, lack of clarity about outcomes, inadequate government capacity to manage the process, and an overly narrow transaction focus.

Second, a strong understanding of the new innovative PPP models developed to address more complex issues can help governments to achieve the proper allocation of risk—even in conditions of pronounced uncertainty about future needs. This allows governments to better tailor PPP approaches to particular situations and infrastructure sectors.

Last, in addition to providing higher-quality infrastructure at lower cost, governments can use PPP transactions to unlock the value from undervalued and underutilized assets, such as land and buildings, and use those funds to help pay for new infrastructure.

Sector Opportunities. Jurisdictions that have reached the second and third stages of maturity typically employ partnerships in more than one or two infrastructure areas. Among the major infrastructure sectors where PPPs have been successfully applied are transport (including road, rail and ports), water, wastewater, schools, prisons and defense. Each sector carries with it different challenges across each phase of the PPP life cycle. Budgeting is a challenge for the education sector, for example, because of high procurement costs for small projects and the uncertainty of alternate revenue streams. Moreover, future demographic and policy changes make overly rigid, long-term contracts less suitable for schools. The bottom line: PPP policies, approaches and political strategies must be tailored to the unique characteristics of each individual sector.

PPPs alone are not a panacea. Rather, they are *one tool*/ states, counties, cities and federal agencies have at their disposal for infrastructure delivery—a tool that requires careful application. Without seeing the partnership as a true partnership—not simply a different type of transaction—and adopting a tailored approach that suits the relative uncertainty and scale of the project at hand, governments are likely to repeat the errors of those before them. By making the best use of the full range of delivery models that are available and continuing to innovate—learning from failure instead of retreating from it—the public sector can maximize the likelihood of meeting its infrastructure objectives and take PPPs to the next stage of development. This development, in turn, will enable this relatively new delivery model to play a far larger role in closing the infrastructure gap confronting America.



Introduction

Back in the 1960s, California was known for more than just Hollywood, the Beach Boys and some of the most beautiful scenery in the country. The state was also famous for its unparalleled infrastructure building. Led by Governor Pat Brown, California had one of the world's most extensive transportation infrastructure programs in the late 1950s and early 1960s, paving the way for much of the state's subsequent economic prosperity.

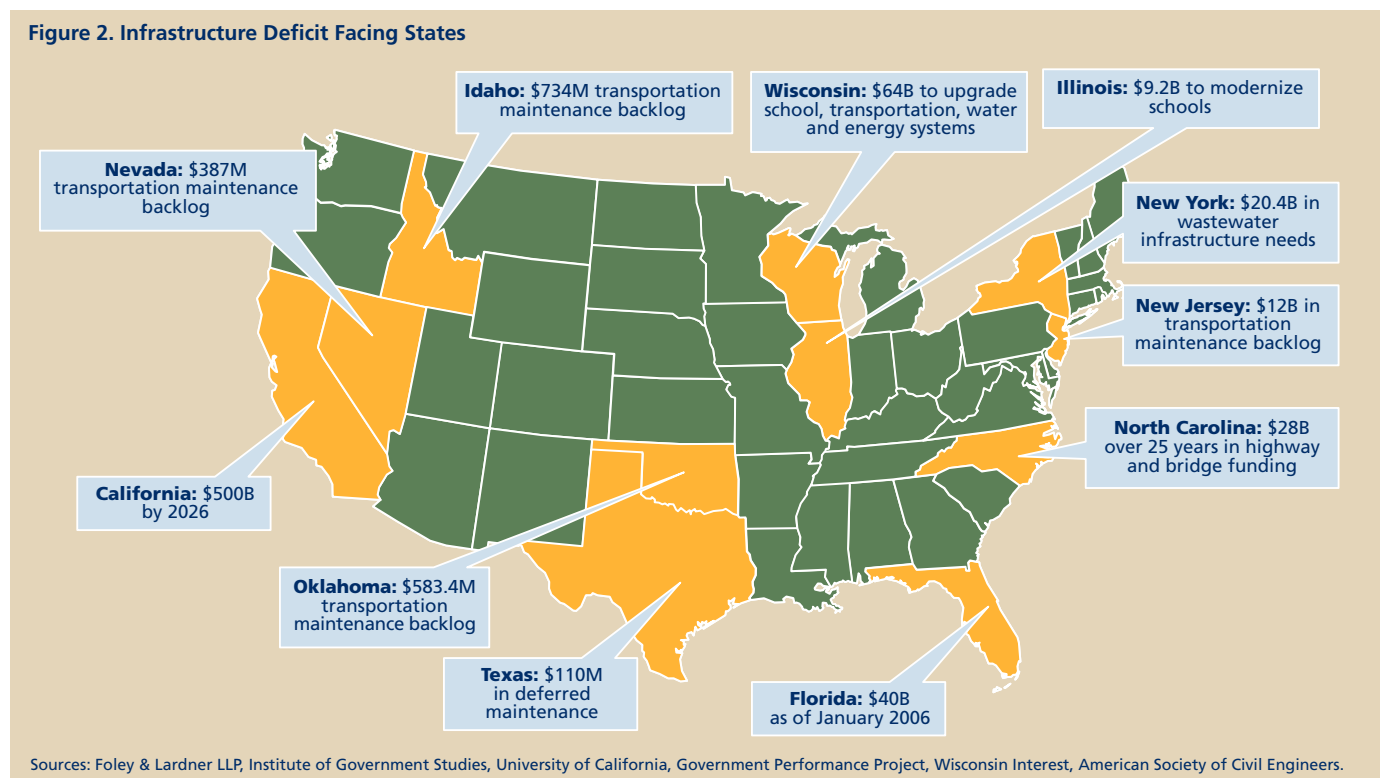
Those times seem like ancient history. These days, annualized state transportation needs amount to around \$16 billion, but California currently funds only about one-quarter of that. The result is a huge and growing backlog of projects—\$100 billion at last count.³ It is no wonder that traffic problems are huge in many of the state's metropolitan areas. Los Angeles and San Francisco–Oakland are the two most congested metropolitan areas in the country.⁴

Most of California's fuel tax money is now used to maintain existing infrastructure, but even these annual revenues—about

\$2 billion—fall short of the \$3 billion a year that's needed to maintain existing highways. The result: substantial deferred maintenance and reduced road quality.⁵ Thanks to the poor quality of their roads, San Jose, Los Angeles and the San Francisco–Oakland area have the dubious distinction of being among the highest cost vehicle maintenance areas in the country.⁶ Recognizing the severity of the state's current predicament, this past November California voters passed an infrastructure bond package to the tune of \$42.7 billion—setting a new public works financing record—with nearly half going to transportation improvement projects.

While the magnitude of the problem may be bigger in California than elsewhere, the state is not alone in facing a widening gap between infrastructure needs and current spending. Across the nation, crowded schools, traffic-choked roads, corroding bridges, and aged and overused water and sewer treatment facilities erode the quality of American life. Nearly three-fourths of major roads in Massachusetts are in poor or mediocre condition, while more than half

Figure 2. Infrastructure Deficit Facing States



the bridges in Rhode Island are structurally deficient or functionally obsolete.⁷ Recently, the American Society of Civil Engineers (ASCE) graded the overall condition of the nation's infrastructure a "D" and recommended investing \$1.6 trillion in infrastructure over the next five years.⁸

Roads, dams, wastewater, drinking water and navigable waterways top the list of infrastructure concerns. Since 1990, the total vehicle miles traveled on the nation's highways has jumped by more than 35 percent. Growing transportation needs require major investment: \$40 billion annually for roads alone. The bill for public transit, where demand has increased by 23 percent over the past decade, is also steep. According to the U.S. Department of Transportation, \$20.6 billion in capital investment is needed annually just to improve current facilities without adding any new capacity.⁹ Meanwhile, the U.S. Environmental Protection Agency estimates that local water and sewer infrastructure will need investments of \$300–\$500 billion over the next 20 years.¹⁰

Yet the ability of governments to properly maintain and invest in new public infrastructure is constrained. Many states confront huge gaps between their infrastructure needs and their current rate of investment (see figure 2). North Carolina, for example, faces a projected shortfall of \$28 billion over the next 25 years in highway and bridge funding.¹¹ In Wisconsin, more than \$64 billion is needed to upgrade the state's school, transport, water and energy systems, with another \$26 billion required for road safety and traffic improvements.¹² U.S. Secretary of Transportation Mary Peters recently warned Arizona that, given its rapid population growth, it would soon have to turn to nontraditional revenue sources for new highway construction and maintenance.¹³

These infrastructure deficits impose huge costs on society, from lower productivity and reduced competitiveness to an increased number of accidents. The Federal Reserve Bank of Chicago estimates that more than half of the decline in labor productivity growth rates in the United States during the 1970s and early 1980s resulted from infrastructure neglect.¹⁴ Today, driving on roads in need of repair costs U.S. motorists \$54 billion every year in extra vehicle repairs and operating costs. This works out to an average of \$275 per motorist each year. Moreover, this cost does not include the economic loss that occurs when productive workers are stuck in traffic rather than on the job. According to the U.S. Federal Highway Administration, outdated and substandard road and bridge design, pavement conditions, and safety features are contributing factors in one-third of the more than 43,000 highway fatalities that occur each year.

How Did We Get Here?

Few governors, state legislators or members of Congress would question the economic importance of having a strong infrastructure. Nevertheless, it is an area where governments perennially underinvest. Why?

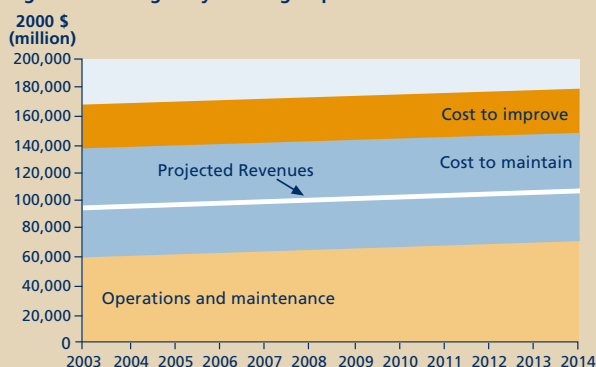
For transportation infrastructure, the funding shortfall results from the inability of traditional highway transportation funding sources to keep pace with increased demand. Since the inception of the Federal Highway Trust Fund in 1957, the country's highway system has been funded in part through fuel taxes. In the 1980s, however, expenditures began to fall relative to revenues.¹⁵ Voter concerns about high fuel prices and taxes limited gas tax increases (the federal gas tax has been level at 18.4 cents a gallon since 1994). Without being indexed to inflation or the direct cost of fuel, the buying power of the 18.4 cents has declined, effectively dropping 8 percent in the last seven years.¹⁶ Also with the increase in the number of more fuel-efficient vehicles, which reduce fuel consumption and thus gas tax revenue, state transportation departments have less money to use for maintenance and new construction than they need (see figure 3).

Federal law also encourages financially constrained planning because projects generally cannot be pursued unless and until federal funding is available. States are constrained by this "pay-as-you-go" approach; it hampers their ability to do effective long-term planning for new projects.

For states with budget pressures, funding for new projects may also fall to the bottom of the priority list. New projects often require funding from multiple authorizing authorities, each of which may be dealing with a different political situation. For example, existing funding for the Bay Area Rapid Transit (BART) connection to the Oakland airport comes from five sources.¹⁷

Budget shortfalls also undermine the ability of states to maintain existing facilities properly, leading to deferred maintenance. This shortens the useful lifespan of roads, bridges, ports and other infrastructure, necessitating expenditures of 6 to 20 times the maintenance costs for rehabilitation or reconstruction. Chronic deferred maintenance also results in reduced quality of services and generally worse financial outcomes.

Figure 3. The Highway Funding Gap



Source: Federal Highway Administration, U.S. Department of Transportation

Options for Closing the Gap

Given these constraints, how can America close its infrastructure gap? New construction generally involves substantial up-front costs. Traditionally, government agencies have had two main options for financing their infrastructure needs: pay-as-you-go financing and debt financing (also known as public bonding). With pay-as-you-go financing, government accumulates revenues sufficient to pay for the new infrastructure before beginning construction or as construction occurs, thereby lengthening the construction period. Given the challenges associated with generating such savings and securing approvals from the multiple authorizing bodies, there can be considerable lag time between when an infrastructure need arises and when it actually gets met.

Public bonding (that is, obtaining a loan to pay for infrastructure), on the other hand, allows infrastructure needs to be met when sufficient public funds aren't immediately available. Each option comes with its own set of pros and cons (see table 1).

Table 1. Pay-As-You-Go versus Debt Financing

Financing method	Pros	Cons
Pay-as-you-go (or PAYGO)	<ul style="list-style-type: none"> • Future funds are not tied up in servicing debt payments • Interest savings can be put toward other projects • Greater budget transparency • Avoid risk of default 	<ul style="list-style-type: none"> • Long wait time for new infrastructure • Large projects may exhaust an agency's entire budget for capital projects • Inflation risk
Debt financing (or public bonding)	<ul style="list-style-type: none"> • Infrastructure is delivered when it's needed • Spreads cost over the useful life of the asset • Increases capacity to invest • Projects are paid for by the beneficiaries of the capital investment 	<ul style="list-style-type: none"> • Potentially high borrowing rate • Debt payments limit future budget flexibility • Diminishes the choices of future generations forced to service debt requirements

Source: Transportation Research Board

Choosing the Right Financing Model

Several criteria should be considered when determining how to finance new infrastructure projects. Two key factors are the level of urgency and current availability of funds. For example, if the infrastructure needs are not immediate and funds are available over time to make a new capital investment, then pay-as-you-go may be a good option. Key questions policymakers should consider include:

- Is there an immediate need for the asset?
- What is the expected useful life of the asset?
- What is the current availability of funds relative to the size of the project?
- Are there multiple projects that need to be completed simultaneously?
- Is inflation expected to increase?
- Is the borrowing rate expected to increase?

Source: Transportation Research Board

Closing state infrastructure gaps requires raising additional revenue, reducing costs or finding new financing sources. Given government restrictions on tax-exempt bonds and the political difficulty of raising taxes to secure new revenue, the most viable options for governments may be to draw upon private financing for new projects or concession revenues through long-term leases of existing assets, where appropriate.

Using innovative models can help to achieve greater efficiency from infrastructure investments (see figure 4). A survey of managers conducted by the Federal Highway Administration estimates that design-build project delivery, which combines the design and construction phases of a project into one contract, reduces project duration by 14 percent and cost by 3 percent, compared to the traditional design-bid-build approach.¹⁹

Given the potential of design-build and other innovative models to reduce project costs and deliver higher quality transportation projects more quickly than with traditional financing and contracting methods, governments are increasingly turning to private sector financing, design, build and operation to meet their infrastructure objectives. These

public-private partnerships (PPPs) typically rely on long-term contractual relationships between government agencies and their private sector partners for the provision and operation of an infrastructure asset. Once employed in only a handful of countries and in limited settings, public-private partnerships are now being used to deliver new and refurbished roads, bridges, tunnels, water systems, schools, defense facilities and prisons.

The United Kingdom has pioneered the PPP trend. Through its Private Finance Initiative (PFI), the UK government makes use of partnership models to develop and deliver all manner of infrastructure, from schools to defense facilities.²⁰ In a typical year, close to 100 PPP projects are initiated or completed in the United Kingdom. PFI projects now represent between 10 and 13 percent of all UK investment in public infrastructure.²¹

Yet little more than ten years ago, PPPs were barely a blip on the radar screen in the UK, and decades of neglect had resulted in deteriorated schools, hospitals and other public assets across Britain. The introduction of private finance reversed this trend, with more than 100 new schools and 130 new hospital projects alone developed through private financing. Just as the United Kingdom's privatization program

of the 1980s inspired governments worldwide to sell off state-owned enterprises, its PFI program has produced scores of imitators.²² In India, \$47.3 billion is scheduled to be invested in highways alone over the next six years, 75 percent of it coming from public-private partnerships.²³ Japan has 20 new PPP projects in the pipeline. In Europe, the volume of PPP deals is doubling, tripling and even quadrupling year to year in many countries.

The United States has been slower to adopt this trend. However, this is rapidly changing. More than half the states now have PPP-enabling legislation on their books.²⁴ Texas, Virginia and Florida have been especially active in using PPPs. Texas, for example, is relying on the PPP approach to develop the Trans Texas Corridor, a massive new statewide transportation network that includes roads, commuter and freight rail, and utilities infrastructure. Virginia, for its part, is negotiating PPPs for several new projects, including the Dulles Rail Corridor, high occupancy toll lanes and reconstruction of tolled truck lanes. Across the country, PPPs are now being considered for an increasing number of projects. In short, the PPP trend is global, accelerating and encompassing a broad range of infrastructure sectors.

Figure 4. Potential Sources of Efficiencies from PPPs

Type	Definition	Examples
Resource Allocation Efficiencies	<ul style="list-style-type: none"> • Efficiencies are gained from the private sector's ability to allocate resources more effectively 	<ul style="list-style-type: none"> • The private sector's motivation is on the completion of the project to a set of performance standards. Conversely, the public sector will have competing interests for operating resources, which may reduce the performance of the project over its life-cycle
Production Efficiencies	<ul style="list-style-type: none"> • Resources for a specific application can also be used more effectively • The ability to be more productive is developed during the private sector organization's years of practice delivering similar projects 	<ul style="list-style-type: none"> • The construction and operation of infrastructure may be completed in less time and / or lower overall cost by using market-tested techniques and incentives for innovation
Economic and Social Efficiencies	<ul style="list-style-type: none"> • Access to more capital allows more projects to be funded on a fixed capital budget • Social benefits of infrastructure accrue faster as infrastructure is built sooner 	<ul style="list-style-type: none"> • More efficient movement of goods and people • Improved quality of life resulting from increased access to infrastructure

Source: Deloitte Research

Public-Private Partnerships 101

A public-private partnership, or PPP, refers to a contractual agreement between a government agency and a private sector entity that allows for greater private sector participation in the delivery of public infrastructure projects. Compared with traditional procurement models, the private sector assumes a greater role in the planning, financing, design, construction, operation and maintenance of public facilities. Project risk is transferred to the party best positioned to manage it. Some of the most common PPP models are described below.

Build-Transfer (BT): Under this model, the government contracts with a private partner to design and build a facility in accordance with the requirements set by the government. Upon completion, the government assumes responsibility for operating and maintaining the facility. This method of procurement is sometimes called Design-Build (DB).

Build-Lease-Transfer (BLT): This model is similar to Build-Transfer, except that after the facility is completed it is leased to the public sector until the lease is fully paid, at which time the asset is transferred to the public sector at no additional cost. The public sector retains responsibility for operations during the lease period.

Build-Transfer-Operate (BTO): Under this model, the private sector designs and builds a facility. Once the facility is completed, the title for the new facility is transferred to the public sector, while the private sector operates the facility for a specified period. This procurement model is also known as Design-Build-Operate (DBO).

Build-Operate-Transfer (BOT): This model combines the responsibilities of Build-Transfer with those of facility operations and maintenance by a private sector partner for a specified period. At the end of the period, the public sector assumes operating responsibility. This method of procurement is also referred to as Design-Build-Operate-Maintain (DBOM).

Build-Own-Operate-Transfer (BOOT): Here the government grants a private partner a franchise to finance, design, build and operate a facility for a specific period of time. Ownership of the facility goes back to the public sector at the end of that period.

Build-Own-Operate (BOO): In this model, the government grants a private entity the right to finance, design, build, operate and maintain a project. This entity retains ownership of the project.

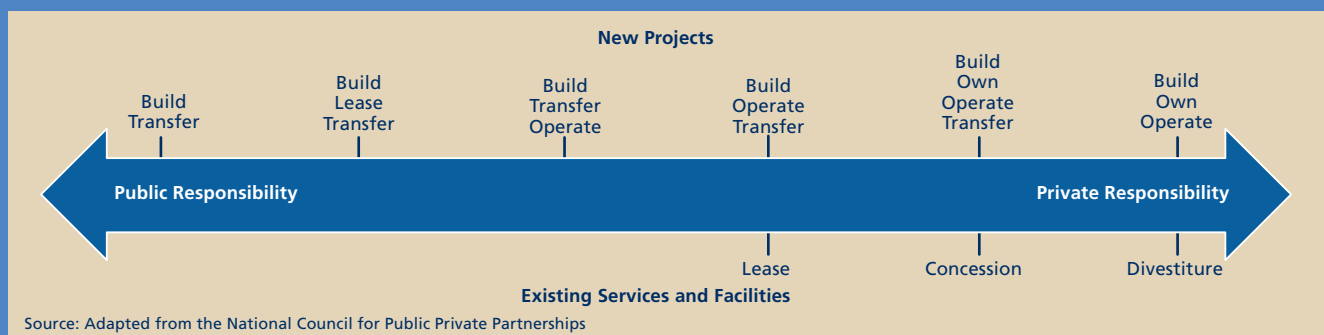
Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M): Under this model, the private sector designs, builds, finances, operates and/or maintains a new facility under a long-term lease. At the end of the lease term, the facility is transferred to the public sector.

In addition to being used for new projects, PPPs can also be used for existing services and facilities. Some of these models are described below.

Lease: The government grants a private entity a leasehold interest in an asset. The private partner operates and maintains the asset in accordance with the terms of the lease.

Concession: The government grants a private entity exclusive rights to provide, operate and maintain an asset over a long period in accordance with performance requirements set out by the government. The public sector retains ownership of the asset, but the private operator retains ownership over any improvements made during the concession period.

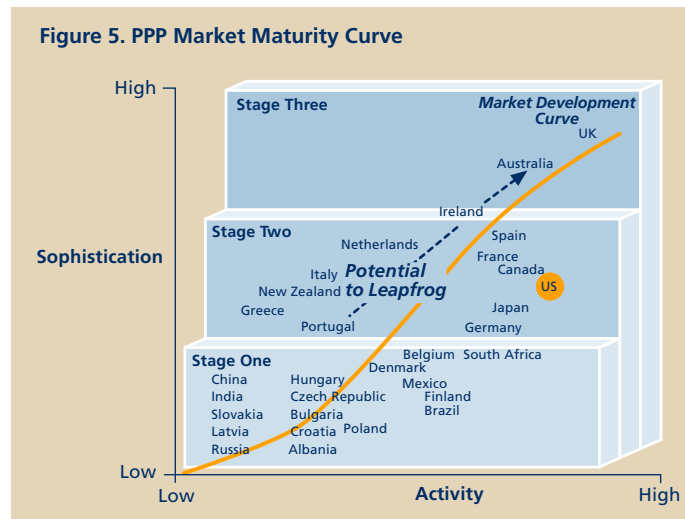
Divestiture: The government transfers all or part of an asset to the private sector. Generally, the government includes certain conditions on the sale to require that the asset be improved and services be continued.



A PPP Maturity Model

One offshoot of the rapid growth of infrastructure PPPs is that countries remain at vastly different stages of understanding and sophistication in using innovative partnership models. Each country—and even individual states and localities—takes its own path in developing infrastructure PPPs. Many factors play a role in development including local geography, political climate, the sophistication of the capital market, the forces driving formation of partnerships and the factors enabling their creation. Nevertheless, three distinct stages of PPP maturity can be observed across the world (see figure 5).

fits-all model to all infrastructure projects. And they can adopt from the outset some of the more flexible, creative and tailored PPP approaches now being used in trailblazer countries. Doing so will allow state and local governments to leapfrog to more advanced stages of maturity. For jurisdictions higher up the maturity curve looking to expand their use of PPPs into new sectors such as education and defense, among others, it is important for them to develop a deep understanding of the challenges and potential solutions particular to each infrastructure area.



This approach, in turn, will enable this relatively new delivery model to play a far larger role in closing the infrastructure gaps bedeviling America. Toward this end, we begin with a short discussion of the benefits states and cities can achieve by using PPPs.

In the US, many states and localities are still at the first stage of PPP development: designing the partnership policy and legislative framework, getting the procurements and contracts right and building the marketplace by encouraging the private sector to bid on these kinds of contracts. Unfortunately, some jurisdictions at this stage seem to be charging headlong into infrastructure partnerships without a deep understanding of what has worked and what hasn't in other places—putting themselves and others at risk of repeating earlier mistakes in other jurisdictions.

Instead, governments at earlier stages of PPP development could benefit from the opportunity to learn from the trailblazers who have moved to more advanced stages: the United Kingdom for schools, hospitals and defense facilities and Australia and Ireland for roads, for example. States and localities can avoid some of the mistakes often made in earlier stages of maturity, such as the tendency to apply a one-size-

Stage One

- Establish policy & legislative framework
- Initiate central PPP policy unit to guide implementation
- Develop deal structures
- Get transactions right & develop public sector comparator model
- Begin to build marketplace
- Apply early lessons from transport to other sectors

Stage Two

- Establish dedicated PPP units in agencies
- Begin developing new hybrid delivery models
- Expand and help shape PPP marketplace
- Leverage new sources of funds from capital markets
- Use PPPs to drive service innovation
- PPP market gains depth—use is expanded to multiple projects & sectors

Stage Three

- Refine new innovative models
- More creative, flexible approaches applied to roles of public & private sector
- Use of more sophisticated risk models
- Greater focus on total lifecycle of project
- Sophisticated infrastructure market with pension funds & private equity funds
- Public sector learns from private partner methods as competition changes the way government operations function
- Underutilized assets leveraged into financial assets
- Organizational & skill set changes in government implemented to support greater role of PPPs

Benefits of Public-Private Partnership Models

Public-private partnerships are unlikely to entirely replace traditional infrastructure financing and development in the US any time soon, if ever. PPPs are just one tool among many. Governments typically have a number of objectives when building infrastructure: acquiring needed assets, getting good value for money, timely delivery, meeting public needs and so on. The procurement model selected for a particular project should be the one that best addresses these objectives.

PPPs, however, have shown significant promise in helping governments address infrastructure shortages. To begin with, they provide new sources of capital for public infrastructure projects. Private equity, pension funds and other sources of private financing must still be repaid, but shifting the financing and delivery responsibility to the private partner can help improve infrastructure in settings where public entities are unwilling or unable to shoulder the debt or the associated risk. Additional benefits include:

On-Time and Within-Budget Delivery

With payments better aligned to the delivery of project objectives, public-private partnerships also have a solid track record of completing construction on time or even ahead of schedule. In Canada, for example, Terminal 3 at the Toronto Pearson Airport was completed 18 months ahead of schedule under a PPP contract.²⁵

The United Kingdom's National Audit Office reported in 2003 that 73 percent of non-PPP (Private Finance Initiative) construction projects were over budget and 70 percent were delivered late. In contrast, only 22 percent of the PFI projects came in over budget and 24 percent were late.²⁶

Shifting Construction and Maintenance Risk to the Private Sector

Politics and budget pressures play havoc with proper maintenance of existing infrastructure. There always seems to be another higher priority: a program or crisis requires more urgent funding. Or a budget deficit pushes funding for infrastructure maintenance further down the priority list. The effect of reducing spending on maintenance is rarely immediate; long before the public complains about crumbling roadbeds or overburdened electricity networks, the elected officials have moved on.

Well-designed PPPs can ameliorate this problem by transferring maintenance responsibility and risk to the private partner. Contract structures require that the assets be available and properly maintained over time. The public sector thereby gains greater confidence in the level of its spending commitments over the lifetime of the asset. Greater cost transparency, in turn, supports better planning and helps to avoid cuts in other service areas as a result of unexpected infrastructure costs.²⁷

Cost Savings

Cost savings from PPPs typically materialize in several different forms: lower construction costs, reduced life-cycle maintenance costs, and lower costs of associated risks.

Construction savings. Experience from several countries has demonstrated that PPPs cost comparatively less during the construction phase of the contract. The savings typically result from innovation in design and better defined asset requirements. A 2000 UK Treasury report found that among a sample of 29 PPP projects for which public sector comparisons were available, the average savings were close to 17 percent.²⁸

In Colorado, the costs of completing construction for segments of the Denver E-470 Toll Road that used a PPP approach came in \$189 million below the original cost estimate of \$597 million. Through the use of an innovative design-build-finance contract, the Virginia Pocahontas Parkway (Route 895) project came in \$10 million below the original \$324 million estimated cost of the project.

Meanwhile, the construction costs of a primary school constructed through a public-private partnership in Pembroke Pines, Florida, was 22 to 34 percent lower than comparable primary schools.²⁹

Reduced life-cycle costs. In traditional contracting, the private sector's role is typically limited to immediate construction. This can create a perverse incentive to economize on elements of construction today even though maintenance costs might be higher in the long run. Shifting long-term operation and maintenance responsibilities to the construction organization creates a stronger incentive to ensure long-term construction quality because the firm will be responsible for maintenance costs many years down the road. It also encourages more preventative maintenance and reduces the risk of future fluctuations in operations costs. The public benefits from this life-cycle efficiency.

Accelerating Infrastructure Construction

Conventional pay-as-you-go infrastructure procurement requires the public sector to provide significant up-front capital even though the benefits of the project may be delayed or uncertain. As with public bonding, most PPPs enable governments to spread the public's share of the infrastructure investment over the lifetime of the asset, much the way homeowners do with a home mortgage. As a result, infrastructure projects can be brought forward by years, allowing users to benefit much sooner than is typical under pay-as-you-go financing. For example, the creative financing approach used for the Virginia Pocahontas Parkway PPP project eliminated what might have been a 15-year delay in construction while financing was assembled.³⁰ Similarly, private financing accelerated South Carolina's Eastern Toll Corridor by 20 to 30 years.³¹ In many cases, the private contractor also has a strong incentive to complete the project as quickly as possible because it needs the stream of revenues to repay the capital costs.

Many jurisdictions also face limits on the amount of debt they can incur. Debt limits are not applicable to some forms of PPPs because the private sector assumes the risk. Hence PPPs can enable more infrastructure to move forward earlier than might otherwise have been possible in the face of debt limits.

Facilitating a Strong Customer Service Orientation

Private sector infrastructure providers, often relying on user fees from customers for revenue, also have strong incentives to focus on providing superior customer service.³² Moreover, since the asset is no longer managed by the public sector, government managers are freer to concentrate more heavily on ensuring the provider meets desired customer service levels. For example, in school or defense facility PPP projects, customer satisfaction metrics can be built into the contract.

In the United Kingdom, more than three-quarters of end users reported that their public-private partnership projects were performing as expected or better than expected; one-quarter said that the facilities were "far surpassing" expectations.³³

Innovation in customer service delivery helps to account for these high satisfaction levels. Motorists using the private sector-operated I-Pass Illinois Tollway, for instance, can receive traffic alerts on current travel times and incident and event information directly on their wireless devices, thereby allowing them to make more educated driving decisions. In addition, the I-PASS Gift Card provides low-income users with an alternative to credit cards.³⁴

Enabling the Public Sector to Focus on Outcomes and Core Business

When properly structured, public-private partnerships enable the public sector to focus on outcomes instead of inputs. Governments can focus leadership attention on the outcome-based public value they are trying to create. This is an important shift for most agencies as they begin to focus on the levels of service, performance and benefits they hope to achieve. The destination, not the path, becomes the organizing theme around which the project is built. Working with their private partners, departments can establish performance metrics to monitor the partners and demonstrate that the intended benefits are being achieved.

School construction PPPs provide a powerful example of how partnerships enable school officials to shift their focus to outcomes and the core business of learning. When the Montaigne secondary school near The Hague in the Netherlands needed additional school capacity, school officials

could have just chosen the usual route of getting bids from several contractors to build a school. Instead, they concluded that what they really wanted to buy was a quality learning environment and not just a physical asset—in this case a school building.³⁵ To that end, they entered a PPP with a consortium of private firms that provide cleaning, caretaking, security, grounds maintenance and information technology, leaving school teachers and officials free to spend all their time on the core mission, teaching children.

Private partners not only help reduce the construction and maintenance costs (thereby reducing the overall cost of the building), they also negotiate other uses for the building after hours. Involvement of the private partner may also help avoid some of the conflicts regarding acceptable after-school and nonacademic use of the facilities.³⁶

While PPPs hold significant benefits as an infrastructure delivery tool, the model is not without its critics. Some of the criticisms are well-grounded and merit careful consideration when evaluating the relative pros and cons of delivery method alternatives. Others, however, are driven by a misunderstanding of PPPs or are based on outdated or incomplete information. For those who would like a fuller understanding of these issues, the most common objections to PPPs are taken up in the appendix.

PPPs also present formidable challenges, both at earlier and later stages of market development. Addressing these challenges and maximizing the benefits of PPPs require governments to operate in a new way. The remainder of the study examines what a successful PPP entails and how to implement it.

Moving Up the Maturity Curve

PPPs have generally proven an effective infrastructure financing and delivery tool, but a number of projects nevertheless have failed to live up to their advance billing. As states, counties, cities and federal agencies make increasing use of this tool, it's important for them to understand criteria for success and improve their capacity to execute and manage innovative partnerships. Some common pitfalls generally fall into these categories:

- **Lack of clarity about project objectives.** Sponsors sometimes lack consensus about the purpose of and expected outcomes for the project. Government officials then often try to compensate for this failure by overspecifying inputs.
- **Poor setup.** The success or failure of PPPs can often be traced back to the initial design of PPP policies, legislation and guidance. A common mistake is placing so many restrictions, conditions and expectations of risk transfer on the private sector partner and agencies involved that a financially feasible deal becomes impossible to structure. Another is having unrealistic expectations for PPPs—thinking that they provide “free money” or that they’re the solution to all problems.
- **Too much focus on the transaction.** The government may view PPPs merely as financing instruments when in fact they represent a very different way of working. This leads to poor operational focus.
- **Inappropriate PPP model applied to project.** Much of what differentiates the various PPP models is the level of risk shifted to the private sector. A common mistake is transferring demand risk, the amount of use the infrastructure will receive, to the private sector when the private contractor has no control over demand factors.
- **Lack of internal management capacity.** Even when the government is supported by external advisers, many tasks cannot be outsourced, and often the agency does not have the skill sets internally to manage complex PPPs.
- **Failure to realize value for money.** This failure occurs when the borrowing and tendering costs associated with PPPs are not sufficiently offset by efficiency gains or when government officials don't have a real understanding of how to test value for money.

- **Inadequate planning.** Without taking proper account of the market in the planning phase, governments may come out with more projects than bidders which in turn creates a noncompetitive environment. On the flipside, too few projects may result in industry moving on to a more active jurisdiction.

Taking PPPs to the next stage means avoiding these mistakes and overcoming the challenges. While a step-by-step guide to designing and implementing PPPs is beyond the scope of this study, lessons learned from PPP trailblazers suggest several strategies for successful execution of these partnerships.

First, governments need a **full life-cycle approach** to PPP planning that confers adequate attention to all phases of a PPP—from policy and planning, to the transaction phase, and then to managing the concession. Such an approach can help avoid problems of poor setup, lack of clarity about outcomes, inadequate internal capacity, and too narrow a focus on the transaction.

Second, a strong understanding of the **new innovative PPP models** available to address more complex issues can help governments achieve the proper allocation of risk—even in conditions of extreme uncertainty about future needs. Proper risk allocation allows governments to tailor PPP approaches to specific situations and infrastructure sectors.

The third strategy involves using PPP transactions to **unlock the value from undervalued and underutilized assets**, such as land and buildings, and using it to help pay for new infrastructure. This strategy gives taxpayers more value for their money. It also encourages greater bidder competition because there is less risk associated with obtaining an interest in the revenue associated with the project. A closer look at each of these strategies follows.

Go Beyond the Transaction: Adopt a Life-Cycle Perspective

To be sure, it's important to get the financial terms of the initial deal right. But equally critical is getting stakeholder buy-in; managing the change process; correctly allocating risk; developing the legislative and regulatory framework; and analyzing the long-term effects of the project on the larger sector, such as the rest of the transportation network or the hospital system. This means developing from the very outset a holistic view of the infrastructure project's entire life cycle.

A life-cycle view helps to get better 'buy in' from all parties involved. It also provides a framework for evaluating whether the solution is the most appropriate for the public over time. Without such a holistic view, on the other hand, public officials will be unable to plan in advance for key considerations that—if not properly accounted for—can stymie efforts to move beyond the transaction stage.

A life-cycle approach best ensures the interest of the government agency that retains ownership and ultimate responsibility for the asset throughout the life-cycle. While many experts emphasize the transaction phase of PPP transactions, the success of the project is actually heavily dependent on a sound policy and legal framework, effective risk allocation, a well-executed procurement process, strong project management, and close attention to the concession phase.

A life-cycle perspective helps governments understand how decisions made during different phases will affect the long-term success of the project. For example, the way a project is monitored will be determined largely by how much risk is transferred to the private sector during the transaction, construction and concession phases. As shown in figure 6, there are three major phases for an infrastructure project under an innovative finance approach.

Policy and planning phase. In the policy and planning stage, a jurisdiction must determine whether it will use innovative funding to meet its infrastructure needs. Some of the activities performed in this phase include defining the jurisdiction's goals and objectives; issuing major guidelines for PPPs; developing the legal framework; defining requirements establishing processes for receiving and qualifying candidate projects; outlining the role PPPs will play in the larger infrastructure program; defining the procurement process; analyzing stakeholder interests; and communicating both internally and externally.

Features of a Legislative Framework Conducive to PPPs

- Afford public entities considerable flexibility in the types of agreements they enter into and the specific procurement process.
- Allow contracts to be awarded according to best value, not just low price.
- Allow mix of public and private dollars.
- Allow "mixed concessions" (the reconstruction or expansion and long-term operation of existing facilities).
- Allow long-term leases of existing government assets.
- Authorize procedures to receive and consider unsolicited proposals.
- Avoid provisions that would require any further legislative act for a project to be authorized or financed, franchise agreement executed or toll rates changed.

Source: Nossaman, Gunther, Knox & Elliot.

A key requirement during this phase is establishing the necessary legislative and regulatory framework to support the PPP program. With governments worldwide competing to attract investment capital, a poor legislative and statutory environment will stymie a state's efforts to engage private firms in planned PPPs. The main features of a legislative framework conducive to PPPs are outlined in the nearby sidebar.

The Oregon Legislative Assembly established the Oregon Innovative Partnerships Program within its Department of Transportation (ODOT) in 2003 to pave the way for accelerating important transportation projects by bringing in new funding, expertise and technology. The legislation gave the ODOT authority to form contractual relationships by entering into partnerships with private sector firms and units of government, and removed barriers to the formation of PPPs.³⁷ The program also allows for the fast-track study, design, funding and construction of state highway projects independent of the normal state procurement process. All in all, the Innovative Partnerships Program creates a platform for constructing new transportation infrastructure projects that might otherwise be decades away or might not be constructed at all.

Figure 6. Infrastructure Project Life-Cycle

	Policy and Planning Phase	Transaction Phase	Construction and Concession Phase
Sequential Activities for Infrastructure Delivery	<ol style="list-style-type: none"> 1. Condition of infrastructure financial situation 2. Legislation/regulation 3. Leadership: policy and project management 4. Planning: environmental assessments and project opportunities 5. Communications: internal and external with major stakeholder groups 	<ol style="list-style-type: none"> 1. Transaction process 2. Shortlist qualified bidders 3. Risk transfer and value for money 4. Payment mechanism/performance 5. Request for proposal 6. Finalize project agreement 7. Preferred bidder selection and negotiations 8. Financial close 	<ol style="list-style-type: none"> 1. Transition to construction (e.g., design/build) 2. Construction and monitoring 3. Facility operation (contract and relationship management) 4. Evaluate whether promised benefits materialized 5. Maintenance: hard and soft service provision 6. Asset hand back
Key Activities	<p>Establish Objectives. The objectives a government establishes for the PPP project form the foundation for evaluating options and allows it to communicate a consistent message regarding the purpose of the program. Time spent fully exploring objectives and core values regarding the government's roles and responsibilities will avoid missteps later in the process.</p> <p>Evaluate Alternative Financing Structures. This evaluation should start with an understanding and analysis of the existing debt alternatives within the state. By preparing a range of financial alternatives, the agency can articulate to its stakeholders what might be accomplished with traditional financing and what innovative financing structures are available and perhaps necessary for project feasibility.</p> <p>Communicate the Benefits. A strategic communications plan that explains the benefits of the program can prevent the discourse from being defined by detractors and focus discussion on economic benefits (such as congestion relief and improved movement of goods) as well as social benefits such as faster and more reliable commute times).</p> <p>Build Market Interest. There should be an appropriate number of projects coming into the market at the right pace to ensure that constructors and facility management firms have the capacity and financial ability to keep pace with the potential projects.</p>	<p>Establish a Realistic Time Frame. Project objectives, the budget, market interest, the amount of risk shifting, project size, and the structure of the deal all affect the timeline for the project delivery.</p> <p>Secure the Best Value for Money. A fundamental objective in any project is to secure the best value for money. Creating comprehensive financial models that allow you to evaluate value for money from both a qualitative and quantitative perspective is a critical component of this process.</p> <p>Establish Performance Standards. This often entails using penalties and rewards to achieve the desired behavior. Care must be taken with both rewards and penalties since they can drive unintended consequences. Setting performance standards will also help to develop the best payment approach for each project.</p> <p>Develop a Draft Project Agreement. These agreements are included with the request for proposal (RFP) and help to identify issues bidders may have before the selection of the successful bidder.</p> <p>Establish Construction Governance. Large infrastructure construction projects should have effective governance and controls in place before the project begins in order to avoid cost overruns, scheduling delays and litigation.</p>	<p>Monitor Construction. Many entities believe that once they have entered into turnkey contracts with concessionaires their responsibility for construction monitoring and oversight has been transferred. The public will continue to hold the public sector accountable for the successful delivery of the project, however, so it is critical to establish sound monitoring programs throughout the construction phase without creating additional project risks.</p> <p>Monitor the Concession. Under traditional procurement approaches, monitoring substantially ends at the completion of construction. In the case of a PPP procurement, the contract monitoring needs to be far more sophisticated because it is required to address a wide range of issues relating to finance, operations and maintenance over an extended period of time.</p> <p>Prepare Staff. Most jurisdictions are used to undertaking these projects on their own. While PPPs may reduce the need for additional staff to do in-house design and engineering work, current staff are required to provide project management and long-term oversight.</p> <p>Establish the Concession Governance Model. It's important that effective project governance models are established and that skilled individuals are in place during both the construction and concession phase.</p>

Transaction phase. The government needs to get a whole series of things right during the transaction phase (and subsequently during the concession phase) to ensure the success of the PPP project. This includes: establishing clear and achievable performance standards; building in the right mixture of financial incentives for good performance and penalties for poor performance; and determining the optimal amount of risk to shift to the private sector.³⁸ The emphasis should be on managing a competitive procurement that provides the best value for the state and meets the specific requirements of the project within defined procurement and contracting rules.

An important requirement of the transaction phase is to protect the public's interests. At every stage of the process, from initiation to the ongoing management of the partnership, government officials must ask key questions such as: What are the core values that the government must protect? How can public officials maintain these values under a contracted model? Answering these questions requires working through important issues, such as access to services, cost to citizens, fairness and equity, financial accountability, stability, and quality.

Construction and Concession Phase. During this phase the private partner operates the infrastructure facility, while the government provides oversight. Two major activities encompass this phase: construction, and maintenance and operation. While the issues involved in each activity are substantially different, in both cases careful attention to the terms and conditions of the contract and incentive methods will pay off. Public officials will want to form a close partnership with the infrastructure provider in order to achieve the goals and objectives for the project.

The key for ensuring that the private partner meets the project goals and objectives is to establish a series of performance measures as part of the concession agreement. These should be outcome-based and reflect the goals and objectives for the infrastructure facility. The British Columbia Ministry of Transportation, for example, divides requirements into these categories:

- **Key performance measures**, which focus on key objectives for asset and corridor management. These should help governments answer the question: "Is this facility meeting its transportation objective at multiple levels?"³⁹

- **Asset Preservation Performance Measures.** Ensuring sound asset management takes place.
- **Operational Performance Measures.** These should focus on day-to-day serviceability.

It's important to recognize that asking private partners to provide government services places more—not less—responsibility on public officials. This requires governments to have a different set of abilities: managers skilled in negotiation, contract management and risk management who will focus on results rather than on defending bureaucratic turf.⁴⁰

The presence of this cadre of managers with strong project management and change management skills will help to ensure that issues that arise in a long concession relationship can be addressed before litigation becomes necessary. When the Netherlands initiated its first highway PPP, for example, the government and the private partner held "alignment meetings" when they faced cooperation problems. These informal meetings, attended by the key team members of both sides, were aimed at de-escalating problems—or "working out conflicts for the benefit of the public."

Use More Innovative Models

You can't fit a square peg into a round hole. While standardization of PPP policies and practices is important, standard templates simply don't work in some situations and sectors. As with experimentation in any area, governments can learn from both the successes and failures of a particular method and adjust their approach accordingly. The same is true for PPP infrastructure development.

For many projects, the traditional PPP model—typically entailing some variation of design, build, finance, operate and transfer—has served governments well. It provides strong incentives for delivering projects on time and on budget, while enabling the public sector to spread the cost of the investment over a 20–30 year period. It encourages a focus on value for money over the lifetime of the asset and is well suited for many large infrastructure projects with well-defined specifications in conditions of relative certainty. While the model is still in its relative infancy, its track record demonstrates it has significant merit.

Hybrid PPP Models

A variety of new and innovative PPP infrastructure delivery models have been developed in recent years to address various challenges posed to public-private partnerships in specific situations and sectors.

Alliancing. Under this model, the public and private sectors agree to jointly design, develop, and finance the project. In some cases they also work together to build, maintain and operate the facility.

Bundling. This entails contracting with one partner to provide several small-scale PPP projects in order to reduce the length of the procurement process as well as transaction costs.

Competitive Partnership. Several private partners are selected, in competition with each other, to deliver different aspects of a project. The contract allows the public sector to reallocate projects among partners at a later date, depending upon performance. The public partner can also use the cost and quality of other partners' outputs as a benchmark for all partners.

Incremental Partnership. The public sector contracts with a private partner, in which certain elements of the work can be called off, or stopped, if deemed unproductive. The public sector can commission work incrementally, and it reserves the right to use alternative partners if suitable.

Source: *Building Flexibility: New Delivery Models for Public Infrastructure Projects*, Deloitte Research, 2005.

Integrator. The public sector appoints a private sector partner, the integrator, to manage the project development. The integrator arranges the necessary delivery functions and is rewarded according to overall project outcomes wherever possible, with penalties for lateness, cost overruns, poor quality, and so on. The integrator has a less direct role in service provision and in some cases is barred from being involved in direct delivery at all. In other cases, the integrator is appointed to carry out the first phase of work, or specified works but is then barred from carrying out subsequent phases of work to remove the potential for conflict of interest between achieving best value for the public sector and maximizing private returns through the supply chain.

Joint Venture. A joint venture company is set up, a majority of which is owned by a private sector partner. The public sector selects a strategic partner through a competitive process that includes a bid to carry out the first phase of work. The typical contract is for 20 years. Subsequent phases are commissioned by the public sector partner, but carried out by the strategic partner using the first phase of work as a benchmark to determine the appropriateness of future costs. The United Kingdom has used a variant of this model, called local improvement finance trust (LIFT), for its hospital PPPs.

The traditional PPP model also has some limitations, however. The procurement process is sometimes long and costly, making it unsuitable for small projects or those with a short lead time.⁴¹ The length of the contracts and relative uncertainty about costs mean that a great deal of pressure is placed on both parties to negotiate a contract upfront that is acceptable in the long-term. Changing service requirements at a later stage often comes with a significant price tag attached.

The public sector also needs to be certain about the infrastructure and service requirements before it decides on the right infrastructure approach. If the public sector is not certain about these requirements, then achieving a fair contract price and ensuring that the infrastructure will continue to meet future demands might be difficult.

Uncertainties might be present as a result of latent defects (flaws in the existing infrastructure that are not apparent until work begins), policy changes (implying a change in service requirements), demand risks (resulting from the introduction of user choice, for example), changes in public needs or rapid changes in technology. For projects that are especially vulnerable to these uncertainties, models with increased flexibility and shorter contract periods can improve the likelihood of achieving public policy objectives for infrastructure development.

Fortunately, recognition of these challenges has served to fuel innovation rather than frustrate further development. To accommodate varying degrees of uncertainty about the future and to lower transaction costs, many new PPP approaches

have been developed, thus expanding the options available for procurement. Between conventional procurement and full privatization, a wide range of financing and delivery options exist. A full understanding of these different types of models—and knowing how and when to use them—can help government agencies choose an appropriate approach and tailor it to meet their particular needs.

Two nearby sidebars (Choosing the Right Delivery Model and Hybrid PPP models) provide an overview of a number of these models and how to choose the best one to meet different circumstances. (A more detailed examination of the models can be found in an earlier Deloitte Research paper titled “Building Flexibility: New Delivery Models for Public Infrastructure Projects.”) Below we take a closer look at how several of these PPP models work in practice.

Alliancing. Where uncertainty about the nature of the infrastructure or services required to meet project objectives is irresolvable (unknown technological risks, for example), using an alliancing model can allow projects to go forward. Alliancing is a term used to describe delivery models in which the focus is on encouraging close collaboration between the public and private sector through the use of payment mechanisms that ensure that the interests of all parties are aligned with the project objectives. The aim is to avoid the adversarial relationships and acrimony that sometimes characterize more conventional procurement models, and instead seek to ensure that all parties work together collaboratively for the good of the project. This model can be particularly useful in the defense sector, where projects can be large and indivisible, and where well-defined outputs are often precluded from the outset.

The Dutch have frequently used alliancing in economic development projects. Such projects often have diverse output requirements (a specific number of social and affordable housing units, designated areas for public space and community centers and a target level of growing economic activities and traffic flow, among others) that require expertise and resources from various public and private partners in order to meet project objectives and share risks. The Alliancing model connects flexibility to effective project implementation to overcome the challenge of joint delivery.

Bundling. For smaller projects, traditional PPP processes can be particularly costly when weighed against the project’s modest revenue streams. This high cost can deter possible private partners from bidding if they feel future revenue is

unlikely to outweigh transaction costs. Bidding on building individual hospitals, for example, requires substantial investment but presents relatively small returns compared to the expense of construction and maintenance.

One way to address this problem is by bundling together several projects. By contracting with just one partner to provide several small-scale projects, the public sector can reduce the length of the procurement process as well as transaction costs. In Australia, bundling sometimes takes the form of grouping hospital construction with ancillary structures and commercial activities, thereby creating enough revenue generation to balance against building and procurement costs. Bundling has also been used in Ireland to reduce the problem of disproportionately high transaction costs relative to the capital value of building new schools.

Incremental partnership. Another option for smaller projects is an approach termed incremental partnership. Under this model, the government enters into a framework agreement with a private sector partner that procures the necessary infrastructure and services on behalf of the public sector. As its requirements become clearer, the government agency can “call off,” or stop specific projects if they appear unproductive. The private sector partner competitively procures the services and infrastructure from subcontractors but retains overall responsibility for service levels as assessed against clear performance measures. There is no exclusivity for the private sector partner—the public sector retains the right to use alternative providers if it wishes. This avoids the weaknesses associated with “big bang,” large-scale contracts that are difficult to reverse and require a long-term commitment from both parties.

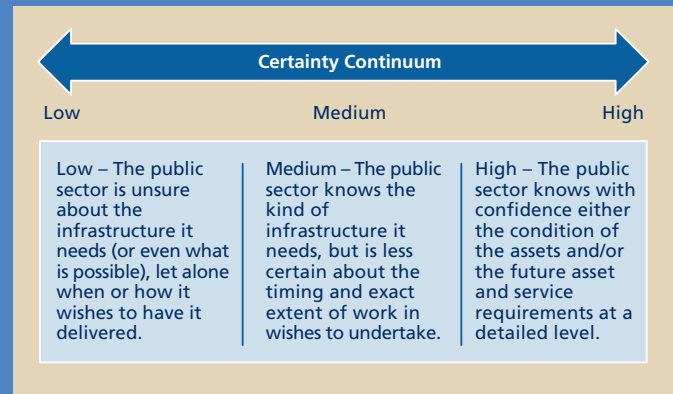
The main point in introducing these models is to illustrate that no single approach addresses all infrastructure issues. Rather, a continuum of delivery models is available to accommodate varying degrees of risk and reduce both transaction costs and procurement time. This range will continue to widen as the field evolves. In the United States, tax-exempt private activity bonds (PABs) and a more lenient regulatory environment are likely to catalyze innovation in delivery models. As experimentation with new innovative partnership models continues, the old way of approaching procurement as an “either-or” decision will continue to give way to new hybrid models that can help meet these challenges.

Choosing the Right Delivery Model

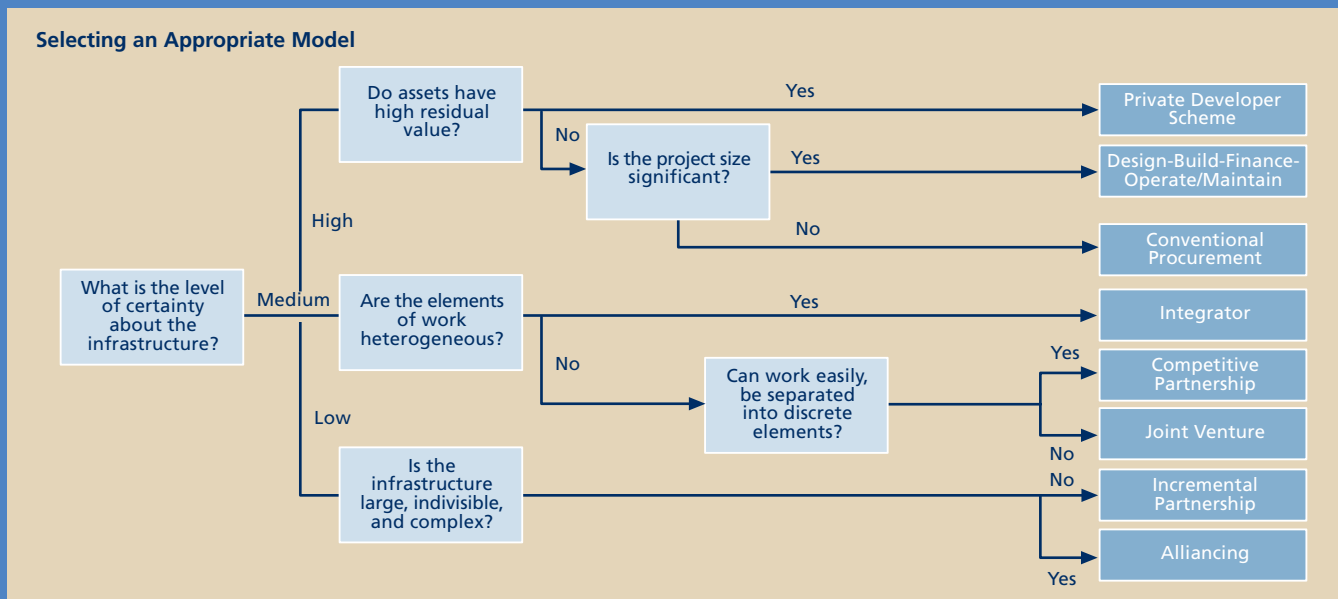
Key Questions

- How confident are you now about the type of infrastructure and services that are needed over the next 10, 15, or 20 years?
- How likely is it that the needs of citizens in this area will change?
- How likely is significant policy change?
- How easy is it to specify what will be needed?
- In which sector is the PPP approach going to be employed?
- How confident are you in the supplier of the service and how much control do you wish to retain?
- Can risks be transferred or would better outcomes be achieved through risk sharing?

The level of certainty the public sector possesses about its infrastructure and service requirements should be a key determinant in the choice of model. This includes certainty about the external environment, including the policy environment, as well as the capacity of contract performance standards and realities and incentives to higher outputs. A high level of certainty suggests that the government can shift substantial control and risk to the private sector (the best options are Private Developer



Scheme, Design-Build-Finance-Operate/Maintain, or Conventional Procurement). The integrator, joint venture, or competitive partnership models should be considered where certainty is more limited. The alliancing or incremental partnership models would be more appropriate when a low level of certainty exists. The decision tree below provides some guidance regarding the most appropriate model in certain circumstances. This list of models is by no means exhaustive; any decision to choose one model over another should always be derived from a robust appraisal of the options, based on the specific circumstances in which the project is being developed.



Source: *Building Flexibility: New Delivery Models for Public Infrastructure Projects*, Deloitte Research, 2005.

Unlock Value from Underutilized Assets

Graduates of the internationally recognized James F. Oyster Bilingual Elementary School wouldn't recognize their old school today. Built back in the 1920s, the school was on its last legs in the early 1990s. Despite the school's strong academic record, leaking roofs, shutdowns due to building code violations, lack of computer hookups, and limited space frequently disrupted the learning environment. Yet, the District of Columbia government didn't have anywhere near the \$11 million budget required to build a new school befitting the nation's capital, nor did they have the borrowing power.⁴²

What the city lacked in financial assets, however, it made up for in physical assets—the school sat on 1.67 acres of prime real estate within walking distance of the National Zoo. A fiscal crisis forced the city to make a hard decision: shut down the decrepit school building and relocate students or find another way to bring the school up to code. So the city decided to convert its underutilized physical assets into a financial asset by dividing the property in half to accommodate a new school and a new apartment building built by the private sector. In return for the sale of the land, the city got its first new school in twenty years—designed and built by a private developer—without spending a single public dollar.

Today, a visit to the old school grounds reveals a new state-of-the-art learning facility nearly double the size of the old building—with long lines of parents eager to enroll their kids—a dramatic departure from the 70-year-old facility that once occupied the same space.

This example points to an important and growing strategy for getting the biggest bang from PPP projects: understanding and unlocking value from undervalued and underutilized assets. Savvy governments take a close look at their full portfolio of assets and determine how to release the maximum value from such assets by exchanging them for other assets or services that might serve more pressing needs. The state of Oregon, for example, is currently working on a swap of highway maintenance facilities in exchange for construction of new facilities.

These public assets tend to be sited in prime locations and often have excess land or control of adjacent properties. The government can use these as equity to partner with the private sector to create new facilities and develop the existing assets. This not only unlocks value from these assets but also helps to meet critical infrastructure needs.⁴³

In the UK, for example, the real estate asset base of local authorities is a huge untapped resource worth around £130 billion. While the authorities have only custodian role for 80 percent of total local government building stock (schools and social housing), they are examining ways to “monetize” the remaining 20 percent—or £26 billion of the aggregate portfolio—for new or expanded infrastructure or services.⁴⁴

One challenge in using land assets to help finance infrastructure is that property values tend to change dramatically over time, increasing the risk that the public sector is not obtaining maximum public value from the asset, while also heightening uncertainty for the private sector. The UK Ministry of Defense (MoD) is using an innovative hybrid structure in a PPP military base development to address this challenge.⁴⁵ The massive project, called MoDEL, involves consolidating up to 14 MoD sites into a single location in Northolt in London. The consolidation will relocate up to 3,500 military and civilian personnel into modern facilities. The £200 million project uses receipts raised from selling surplus property over seven years.

Infrastructure Sector Opportunities and Challenges

Another key feature of a more advanced PPP environment is the application of the concept to multiple infrastructure sectors. Governments that have reached the second and third stages of maturity typically employ partnerships in more than one or two infrastructure areas. These partnerships exist across both economic infrastructure (multi-user facilities and services that are direct inputs in the chain of production, including water, waste and transport facilities) and social infrastructure (large-scale multi-user services and facilities that are not direct inputs in the chain of economic production, including health care, education, and public housing).

Governments that have multiple, successful partnerships recognize that each sector carries with it different challenges across each phase of the PPP life cycle. PPP policies, approaches and political strategies therefore must be tailored to the unique characteristics of each individual sector. Take education, for example. Fluctuating (or declining) birthrates could make a new school obsolete in 15 to 20 years, creating some uncertainty about the efficacy of funding school construction.

Advanced governments also recognize that some sectors may not be appropriate for PPPs in their countries or in certain situations. For example, the United Kingdom has learned that large information technology (IT) and telecommunications projects are not especially suited for PPPs—particularly highly innovative and risky IT initiatives.

While much of the public-private partnership activity in the United States has focused on the transportation arena, other sectors with pressing infrastructure needs—water and wastewater systems, schools, military base conversions, and prisons—also serve as strong candidates for PPPs.

This section describes some of the principal PPP infrastructure sector opportunities, outlines the challenges particular to each sector, and then provides guidance on how the framework presented in the previous section can help governments better execute partnerships in the individual sectors (see table 2).

Transportation

Internationally, transportation has been the largest area of PPP investment. Public-private partnerships have begun to play a central role in answering the pressing need for new and well-maintained roads, tunnels, bridges, airports, ports, railways and other forms of transportation infrastructure.⁴⁶



Several factors make transportation infrastructure well suited for PPPs. First, the strong emphasis on the role of cost and efficiency helps to align private and public interests. Second, the growing (but by no means universal) public acceptance of user fees for assets such as roads and bridges makes private financing easier here. (In other sectors fees often come from the government.) The ability to limit participation to actual paying customers, in the form of train tickets or road or bridge tolls, ensures a revenue stream that can offset some or all of the cost of service—a format readily understood by the public. In cases where direct user fees are not desirable, politically or otherwise, fees can be levied indirectly (see Port of Miami Tunnel sidebar). Third, the scale and long-term nature of these projects are well served by PPPs.

To date, nearly \$21 billion has been invested in 43 highway facilities in the United States using various public-private partnership models during the last 12 years.⁴⁷ California, Florida, Texas and Virginia are leaders in this field, having accounted for 50 percent of the total dollar volume (\$10.6 billion) through 18 major highway PPP projects.⁴⁸

State Highway 130 in central Texas is the state's first highway developed under a Comprehensive Development Agreement which allows property acquisition, design and building to proceed simultaneously.⁴⁹ The project costs around \$3.66 billion and is being sponsored by the Texas DOT and Texas Turnpike Authority.⁵⁰

To the West, the state of California has 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 will be built and financed by the private partner. Upon completion, ownership will be transferred to the state. 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.⁵¹

Table 2. PPP Sector Opportunities

Sector	Leading Practitioners	Main PPP Models Employed	Challenges
Transport 	Australia, Canada, France, Greece, Ireland, Italy, New Zealand, Spain, UK, US	BOT, BOOT, Divestiture	<ul style="list-style-type: none"> • Demand uncertainty • Supply market constraints • Opposition to tolls • Transportation network impacts • Competing facilities
Water, wastewater, and waste 	Australia, France, Ireland, UK, US, Canada	BT, BTO, BOOT, Divestiture	<ul style="list-style-type: none"> • Upgrading costs and flexibility • Uncertainty about technology and need for innovation • High procurement costs for small-scale projects • Political sensitivity around privatization concerns
Education 	Australia, Netherlands, UK, Ireland	BT, BTO, BOT, BOOT, DBFO/M, integrator	<ul style="list-style-type: none"> • High cost due to uncertainty about alternative revenue streams • High procurement costs for small projects • Uncertainty about future demographic or policy changes
Defense 	Australia, Germany, UK, US	DBOM, BOO, BOOT, alliance, joint venture	<ul style="list-style-type: none"> • Uncertainty about future defense needs • Rate of technological change • High upfront costs in small-scale projects • Securing value for money in noncompetitive situations
Prisons 	Australia, France, Germany, UK, US	BT, BTO, BOO, management contract	<ul style="list-style-type: none"> • Political sensitivity • Public purpose issues • Specifying outcomes

PPP models are not only being applied to new projects, they are also being used for operating and maintaining existing assets. The City of Chicago struck a landmark long-term toll road lease with the Skyway Concession Company, a joint venture between Spanish toll road operator Cintra Concesiones de Infraestructuras de Transporte and the Australian Macquarie Infrastructure Group—the first of its kind in the United States—that brought in \$1.83 billion to cash-strapped city coffers. In return for operating and maintaining the tollway for the next 99 years, the Skyway Company will collect toll and concession revenues. Subsequently, the Cintra-Macquarie venture partnered with the Indiana Department of Transportation to operate and maintain the Indiana Toll Road, paying the state \$3.8 billion to lease the toll road over the next 35 years—a windfall of cash that’s being reinvested in the state’s 10-year “Major Moves” transportation plan.

An ardent supporter of “21st century solutions for 21st century transportation challenges,” U.S. Secretary of Transportation Mary Peters explains that, “We can’t assume that the methods of the past will work for the future.”⁵² The federal government is actively encouraging states to experiment with PPPs by providing new federal tools to make private sector participation in transportation infrastructure projects easier and more attractive (see table 3).

While the reauthorization of the federal surface transportation program provides for modest increases in the share of federal funds states receive for transportation, states will continue to face a considerable funding shortfall absent the use of innovative approaches to close the gap. The significance of this shortfall extends far beyond the immediate mobility crisis. As Texas learned—the hard way—inadequate infrastructure can be a deal breaker for economic expansion. When PC maker Dell decided to locate its next expansion in Nashville rather than in Austin, the company’s headquarters—given the mediocre condition of Austin’s roads—the city lost out on 10,000 new jobs. As a result, the state is stepping up its efforts to close its transportation gap to regain competitive advantage. The good news for states willing to learn from Texas’s experience is that by taking advantage of increased federal latitude, new financing and available delivery tools, as well as capital markets eager to invest in the transportation sector, states can get a better handle on their own transportation backlogs.

The Transportation Infrastructure Financing Innovation Act (TIFIA)	Provides federal credit assistance to nationally or regionally significant surface transportation projects. In 2005 the program was broadened. The qualifying project cost threshold was reduced to \$50 million, or \$15 million for Intelligent Transportation Systems projects, and program eligibility was extended to more projects, including private facilities deemed publicly beneficial for highway users.
Private Activity Bonds (PABs)	Provide private developers and operators access to tax-exempt interest rates for highway and surface freight transfer projects, significantly lowering the cost of capital. Highway facilities and surface freight transfer facilities are eligible for up to \$15 billion in tax-exempt facility bonds.
Special Experimental Project 15 (SEP-15)	Enables states to obtain federal waivers to experiment with new public-private partnership approaches in four major areas of project delivery: contracting, right-of-way acquisition, project finance and compliance with the National Environmental Policy Act and other environmental requirements.
Toll Credits	Allow states to collect tolls on federally funded Interstate highways for the purpose of improving Interstate highway corridors.

Source: U.S. Department of Transportation

Transportation PPPs: Challenges and Solutions

Challenges

Cost containment. This is hugely important given the generally high capital value of transport PPPs.

Competitive markets. In developing PPP markets, only a small group of companies may have the financial capability to deliver cost-effective PPP projects. The range of complex financial arrangements required for transport PPPs and the relative lack of expertise in such matters also narrow the scope of potential partners.

Demand forecasting. Accurate traffic demand forecasting can be tricky for new roads and other forms of transport, complicating financing arrangements that often are predicated on a certain level of toll revenues.

Solutions

Because the transportation sector is the most advanced in the use of PPPs, several solutions to these challenges have already been tested. For example, “shadow tolling” and availability-based payments have been used in situations where demand uncertainty about road use makes pulling a financing package together difficult. The public sector pays “tolls” to the private partner based on the availability of the asset to users and on service levels, such as the condition of the roads, thus transferring the demand risk to the public sector and allowing the project to go forward under conditions of uncertainty.



Port of Miami Tunnel

The Port of Miami is actually an island off the coast of Florida, currently connected with the city of Miami by a highway that goes through the central downtown area. The port generates a tremendous amount of cargo and passenger traffic, causing substantial congestion in downtown Miami. The state's Department of Transportation has proposed construction of a \$1 billion tunnel to bypass the downtown area and allow highway traffic direct access to the port.

Because it lacked experience in either designing or constructing tunnels, as well as the desire to build such expertise internally, the state transportation department initially decided on a design-build partnership. Quick construction was essential because of public concern regarding the congestion, so choosing a private firm made sense. The department also decided against imposing tolls on the use of the tunnel because it wanted to encourage users of the port to use the tunnel. Instead, the state would indirectly capture user fees through container and passenger fees on docking ships. Additional funds would come from Dade County and the city of Miami in return for the congestion relief.

After determining the sources of revenue, the department considered a large revenue bond, but decided against it because it would be tied to a 30-year repayment schedule. The agency finally settled on a DBFO/M for the tunnel proposal, with the private financing being repaid by the department through revenue raised on the container and passenger fees. The payments would be tied to the availability of the tunnel for public use and to quality measures, but they wouldn't be tied to the specific levels of traffic passing through unless traffic exceeded certain threshold levels, in which case, the private partner would receive more to cover increased maintenance costs.

The private partner in this arrangement does not bear any risk for demand management: if traffic falls below projections, the private partner would still receive the same payment, assuming it met quality measures. The state agency decided to retain the demand risk because it felt it had better control of that risk. The agency was relatively confident about the continued long-term growth of both the city and the port and did not believe that demand risk would pose a significant problem.

The Port of Miami project illustrates some interesting options. The use of availability payments could sidestep some of the political concerns regarding tolls. Just as important, the use of container and passenger fees in lieu of tolls could potentially streamline both traffic and collection issues.

Water and Wastewater

Water and wastewater management represents another fast-growing area for PPPs. In the United States, private operation of water and wastewater systems rose 84 percent during the 1990s and 13 percent in 2001 alone. As of 2003, more than 25,000 drinking water systems were managed by the private sector.

Outside the United States, many governments are engaging the private sector to design, build, finance and operate new water and wastewater facilities. For example, the total value of water and wastewater PPP projects in the Australian states of Victoria and New South Wales is approximately \$131.5 million.⁵³ With aging water and wastewater systems demanding more than \$28 billion for renewal, many Canadian municipal governments have also begun to consider alternative financing mechanisms to deliver water service.⁵⁴

Helping to meet the huge and rising needs for new and refurbished treatment facilities could well be the biggest potential impact of PPPs in this sector in the United States. The estimated \$300-500 billion in water and sewer infrastructure investment needed over the next 20 years is likely to be beyond the ability of the state and local governments to fund on their own.

IRS rule changes promulgated in 1997 allow governments to enter into long-term contracts of up to 20 years with private firms to operate infrastructure facilities without losing their tax-exempt bond status. The longer-term contracts give the private operators more time to recoup their investments in infrastructure improvements, making such investment far more attractive than before. Since the rule change, more than 100 municipalities have entered into long-term contracts for operations and maintenance of their water or wastewater systems.



Water and Wastewater PPPs: Challenges and Solutions

Challenges

Substantial procurement costs. High procurement costs and high uncertainty about the availability of technology require a contractual framework with shorter procurement times that fosters innovation.

Uncertainty. The condition of assets in existing facilities may result in an increase in project costs.

Scale. The size of the project may not allow for efficient use of private finance.

Politics. Water and wastewater are often seen as falling squarely under the public sector domain. Public employees may have deep concerns for their welfare under the new management.

Solutions

Thinking creatively about the best financing and delivery model can help overcome some of the challenges in this sector. For example, governments can reduce the length of the procurement process and attract companies with stronger financial and operational capacity by using a bundling approach. This saves procurement time and effort as the public sector is no longer required to contract with different private partners in delivering individual small-scale projects.

A key challenge in this sector is that the consumer is generally not exposed to the full cost of water. Moving to full cost pricing of water utilities before moving to a PPP approach can help to avoid rate shocks that may derail the project.

Education

The majority of public schools in America were built to accommodate the Baby Boomers—meaning these facilities, on average, are now more than 40 years old.⁵⁵ The investment required to bring the nation's schools up to good condition is estimated to run between \$19.7 billion and \$28.6 billion.⁵⁶ Public-private partnerships could potentially help make up the funding shortfall and meet growing near-term enrollment demands.

While there are variations, the private sector typically finances, designs, constructs and operates a public school facility under a contract with the government for a given time period, for example, 20 to 30 years. At the end of that concession period, ownership of the facility transfers to the government. The private sector often also provides related noncore services (school transport, food services, cleaning and so on) under contract, while the government continues to provide core services, namely, teaching.

Sale-leaseback and lease-leaseback arrangements represent two other common PPP models used for schools. The school district typically either sells or leases surplus land to a developer who builds a school on the land and leases it back to the school district on favorable terms—or in some cases provides the facility free of charge to the school district in exchange for development rights on this land or other surplus property. In 1996, the Houston Independent School District used a lease-leaseback arrangement with a private developer to obtain two new schools \$20 million under budget and a year earlier than originally planned.⁵⁷

Potential Benefits of School PPPs

- Faster construction
- Shift expenses from capital to operating budgets
- Focus attention on core educational goals and away from facilities management
- Innovative designs resulting in built-to-suit schools
- Enhanced community use from multi-use facilities

The United Kingdom is home to the world's largest and most sophisticated PPP schools program. Most new schools are built using some variant of PPP model. All in all, more than 100 education PPP deals have been signed, with a value of \$3.6 billion. The next frontier: using PPPs to refurbish and modernize every school in the country. Over the next 10–15 years, every school in Britain will be brought up to 21st century standards through a program called Building Schools for the Future.

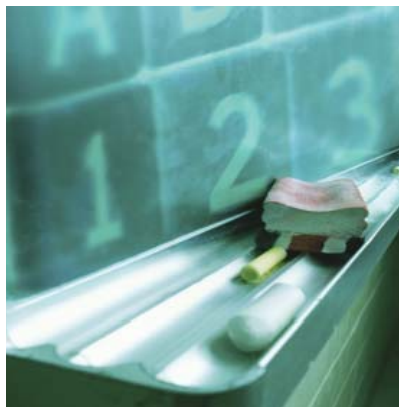
Compared with those in the United Kingdom, school PPPs in the United States are still in their infancy. Several factors, however, point to continued growth here. First, the 2001 Economic Growth and Reconciliation Act passed by Congress allowed, for the first time, private developers to finance new school building with tax-exempt private activity bonds, providing them access to preferred borrowing rates.

Second, several states in recent years have passed laws explicitly authorizing and encouraging school PPPs. In 2002, for example, Virginia passed the Public-Private Education Facilities Act, enabling the public sector to enter into public-private partnerships for infrastructure projects. Stafford County was the first to take advantage of the new authority. The county partnered with a private developer to build two new elementary schools, a high school and several revenue-producing community facilities. Other cities and counties in Virginia have followed suit, allowing both solicited and unsolicited proposals for design-build schools. Maryland passed similar legislation authorizing alternative financing methods.⁵⁸ The absence of authorizing legislation in a state could potentially significantly delay school PPP projects.

Despite the potential benefits of using PPPs for school projects, Nova Scotia, Canada, which used PPPs to build 39 schools in the late 1990s, provides a cautionary tale. Originally, the government had planned to build 55 schools, but the number was scaled back when the initiative was beset by a variety of political and other problems, including cost overruns, weak government management and problems with the contract terms.⁶⁰ Today privately operated schools represent approximately 14 percent of the square footage in the province's schools.

Using Partnerships to Overcome School Overcrowding

Several years ago, the Natomas Unified School District in Sacramento employed a public-private partnership to help address the problem of overcrowding in its high schools. Using a lease-leaseback model, the district leased part of its land to a private developer that financed and built a new school on the leased land. The school district makes payments to the developer until the end of the lease period, at which time the school will be transferred to the school district. The result: a state-of-the-art facility equipped with solar skylights, clerestory windows and glass walls to cut back on electricity costs, and an energy-saving system that earned the school district a \$2 million rebate on its utility bill from the Sacramento Municipal Utility District. The new high school also features a geothermal heating and cooling system expected to last 35 years longer than a conventional system, making the school less expensive to operate and maintain over the life of the facility. The school was completed \$2.5 million under budget and a month and a half ahead of schedule.⁵⁹



Education PPPs: Challenges and Solutions

Challenges

Uncertainty. The possibility of future changes in education policy and demographic shifts introduces uncertainty into the procurement process.

Other use policies. Depending on the contract, private partners may use the buildings and facilities for other purposes outside of school hours to generate extra income. Doing so can translate into more money that can then be channelled back to schools, where it can then be invested in other projects or improvements. However, the municipality may see uncertain revenues translated into a higher price and must also be careful to negotiate rights to after-school facility use.

High transaction costs. For small-scale projects, transaction costs can typically be high, particularly for cases where the procurement process is long and complicated. The capital value of individual schools may not attract sufficient sector interest.

Solutions

As mentioned earlier, bundling can be used to address the issue of small-scale projects with high transaction costs. In school construction, PPP becomes financially more attractive as the number of schools covered by the contract increases. This is particularly the case for the construction of primary schools, where projects tend to be small and of more limited scope.

The incremental model, in which different elements of the work can be called off on an ad hoc basis, is one option for reducing the challenges of uncertainty. The public sector would retain the option to contract with other partners without incurring financial penalties. This approach allows for some flexibility to meet demographic or policy changes. In addition, PPP contractual terms should be made flexible enough to provide for the possibility that the school may need to be enlarged.

Last, a “buy-back” model can be used. Under this model the government purchases the school building from the private partner once it has been completed and then contracts back for maintenance services.

Military Base Conversion

Base closures are a significant economic development issue in many states, involving the potential loss of thousands of local jobs. In certain instances, however, properly constructed PPPs may offer an innovative alternative to closure and the resulting local job loss.

Consider the example of the Indianapolis Naval Air Warfare Center. City officials, working with the Navy, rejected a simplistic view of base closure to ask a fundamental question: “What is the best possible way to maximize defense of the country with the dollars available?” Instead of framing the question as whether to transfer government jobs from one place to another, city officials asked whether a public-private partnership could take over the installation and deliver the Navy’s work at a lower cost.⁶¹ The city of Indianapolis and the Navy issued a formal request to the private sector for ideas about how to use the naval facility to produce important engineering components for less while also spurring local economic growth. The result: the country’s largest base privatization.

The joint effort saved more than 2,000 jobs and allowed the Navy to downsize its infrastructure while preserving needed services. By keeping the facility open, the parties avoided closure costs of \$200 million and maintained access to a skilled workforce.

Other defense PPP opportunities exist in military housing redevelopment and privatization. For example, the Army’s Hawaii Family Housing project, a joint venture between the Army and Actus Lend Lease, involves construction of 7,894 new military housing units at seven Army installations on Oahu over a 10-year period. Under a 50-year lease, \$1.6 billion in privately financed housing will be furnished to the Army.



Defense PPPs: Challenges and Solutions

Challenges

Uncertainty over future demand. Changing user requirements and land values that may be subject to factors beyond government control make specifying long-term requirements and negotiating contract provisions with the required precision difficult.

Rate of technological change. The high rate of technological change and complexity involved in information technology projects in the defense sector requires considerably more flexibility than many traditional PPP models can accommodate.

High upfront costs. Traditional PPP models can be unsuitable for projects unless the contract lasts long enough to achieve value for the money needed to initiate the project.

Solutions

In noncompetitive situations, renegotiating and extending an existing contract may be an option. The government needs to be sure, however, that the contract extension improves the contractual terms, lowers costs, and delivers better services.

As in other sectors, alliancing and incremental partnership models work well when demand is uncertain because these models break the PPP work into phases. The integrator model could also be used to meet this challenge, as in the case of MoDEL in the United Kingdom. Under this model, the private sector partner has responsibility for project development and takes significant project risk but has a less direct role in service provision. The integrator is appointed to carry out the initial phases of work but is barred from direct delivery and from carrying out the subsequent phases.

To overcome the high levels of uncertainty in information technology projects, an alliancing strategy may be used, provided that the public sector is able to retain the significant project risks and has the requisite negotiation and project management experience.

Prisons

Close to 7 percent of inmates in state and federal prisons in the United States are in private facilities, the highest number of prisons in any country in the world. As many as 34 states and the federal government have contracted with the private sector to provide prison services. In New Mexico, for example, around 45 percent of prisoners were in private prisons as of 2001. As public service contracting expert Gary Sturgess points out:

The US prisons market is extraordinarily complex, with some facilities that are publicly owned but managed by the private sector under contract; some that are privately designed, built and operated under long-term contract to government; some that are privately owned but leased to other private (or public) providers; and a number that have been constructed by private companies (or by public-private joint ventures) on a speculative basis and offered through a spot market to governments with overcrowding problems.⁶²

All in all, the number of prisoners in private prisons is increasing at four times the rate of growth of inmates in public sector prisons. Six states now hold at least one-quarter of their prisoners in private facilities.⁶³ Texas, which has the largest number of prisoners in private prisons, compares its public and private prisons on a biannual basis and mandates that private prisons provide at least 10 percent more savings than publicly maintained prisons.⁶⁴



Prison PPPs: Challenges and Solutions

Challenges

Political sensitivity. Because the choice of where to site a prison can be politically contentious, prison PPPs typically require considerable reconciliatory work between diverse institutions, like government finance and justice officials, labor unions, and zoning boards.

Setting performance standards. Designing outcome-based performance requirements is particularly complicated for prisons due to the risk of unintended consequences. One example: tough financial penalties for escapes unintentionally might cause a climate in which prisoner maltreatment increases.

Solutions

Government officials must pay close attention during each phase of the PPP life cycle to the core public values they must protect and to how they can maintain the integrity of these values in a partnership.⁶⁵ Critical are well-written performance standards that reward the private partner for providing the kind of care required. Among the items that should be specified are minimum levels of health, food, and other necessities; the number of government employee monitors who will always be on site; what they will inspect; and how frequently the inspections should occur.

Conclusion

Looking at the infrastructure challenge facing America today may seem overwhelming. The historical boom-and-bust spending cycle in the states has created huge infrastructure deficits, the consequences of which are significant both for citizens who have to deal with decrepit facilities and for state governments fighting to stay competitive in today's flat world.

PPPs are not a panacea. Rather, they are *one tool* governments have at their disposal for infrastructure delivery; one that has produced several benefits: faster construction; big gains in on-time and within-budget delivery; reduced life-cycle costs; better value for money; a vastly improved overall investment climate for infrastructure; and economic stimulus. By making the best use of the delivery models that are available and by continuing to innovate, the public sector can confront the infrastructure challenges ahead.



Appendix: Answers to the Most Common Objections to PPPs

Objections to PPPs tend to be markedly similar across jurisdictions. For the most part, the main objections simply reflect a sincere desire to protect the public purpose and get the most value for taxpayers. Nevertheless, some of the concerns are driven by a misunderstanding of PPPs, while others are based on outdated or incomplete information. Following are answers to the most common concerns.

1. Higher Cost of Capital

Government-issued debt is cheaper than the private sector's, making private financing and development a bad deal for taxpayers.

This is perhaps the major objection to PPPs. This line of argument contains some truth, but it also overlooks several important points.

Difference between cost of capital and cost of debt. First, the argument assumes that the cost of capital and the cost of debt are one and the same. However, a government's risk-adjusted average cost of capital typically exceeds its cost of debt because the public sector takes on project-specific risks such as cost overruns and delays that need to be factored into the cost of capital for each project it undertakes. Moreover, even though the private sector takes on some of the risks of construction, time overruns, and project performance, it can better control its capital costs by making efficient use of resources. The comparison should therefore be between the public sector's cost of capital (to which a risk premium must be added) and the private sector's cost of capital (which amounts to the weighted average of its cost of debt and equity), not between the two sectors' different costs of borrowing (see figure 7).⁶⁵ Moreover, the benefits achieved in terms of superior service delivery alone are often worth the extra costs to the government.

Gap Narrowing. Second, as the private infrastructure market has grown and financing mechanisms have become more sophisticated, the gap between the public and the private sector's cost of debt has narrowed. For example, with the maturing of the private finance market in the United Kingdom, the financing costs difference between the private cost of capital and public borrowing is now in the range of only 1-3 percentage points. The additional cost to the public sector should not be significant enough to risk losing the value for money of the project, provided the private sector can deliver savings in other aspects of the project.⁶⁶

Creative Financing Models. Last, a variety of financing approaches enables governments to combine their ability to obtain lower interest rates with the benefits of private financing and development. In the United Kingdom, the Treasury launched a program called Credit Guarantee Finance (CGF) to reduce the costs of borrowing to finance PFI (Private Finance Initiative) schemes.⁶⁷ Under the credit guarantee program, the government provides funds to the PFI project through cash advances governed under the terms of a loan agreement. The private firm repays these loans to the government after completing the project. The government receives an unconditional repayment guarantee from the private financier for providing this loan facility in return for a fee.⁶⁸

In the United States, the Department of Transportation has allocated \$15 billion in tax-exempt private activity bonds for qualifying PPP highway and intermodal freight facilities. This approach lowers the private sector's cost of capital significantly, enhancing the investment prospects.

2. Failure to Realize Value for Money

When you combine the higher borrowing costs of private financing with the often higher transaction costs—and subsequent monitoring costs—of engaging in these kinds of deals, the taxpayers end up paying far more than they would have under more traditional public financing.

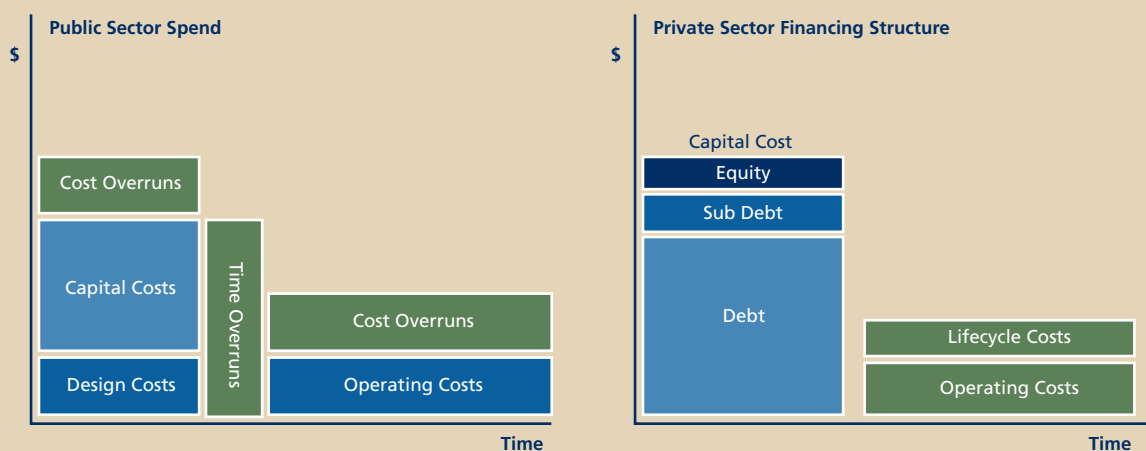
The issue of value for money should be an important feature of any public infrastructure project, though it gets more emphasis with PPPs. Value for money is based on the theory that the private sector brings in benefits and efficiencies that outweigh its higher borrowing costs. In analyzing value for money, it must be recognized that lowest price does not always mean best value. Value for money is a function of, among other things, price, quality and the degree of risk transfer. UK government officials consistently rate PPPs as a good value for money. In a survey of 98 projects by the UK National Audit Office in 2001, for example, 81 percent of the public authorities said they were achieving satisfactory or better value for money from their PFI contracts, while only 4

percent described value for money as “poor.”⁶⁹ A more recent survey of Scottish local government authorities made similar findings.⁷⁰ Last, conventional procurement has resulted in very poor value for money, thanks to cost overruns, delays, and so on.

Several factors contribute to value for money, but primary among them is efficient risk allocation. Risk allocation is based on the premise that risk should be transferred to the party that is best suited to manage it. Optimal risk allocation leads to reduced cost associated with risk, which in turn leads to better value for money.

Evidence supports the view that PPPs transfer construction and maintenance risk to the private sector more effectively than traditional methods and is likely to deliver value for money where competition is strong and the projects are large. A review of eight Partnerships Victoria projects found a weighted average savings of 9 percent against the risk-adjusted Public Sector Comparator.⁷¹ In the case of smaller projects, “bundling” helps to spread procurement costs across several discrete projects.⁷²

Figure 7. Public Sector Costs vs. Private Sector Costs



Source: Deloitte Research

3. Windfall Profits to the Private Sector

The private sector sees the opportunity to make windfall profits from infrastructure investments—particularly investment banks and financiers who often receive big upfront fees from refinancing the debt.

Indeed, concession holders will likely seek to refinance their project debt on more favorable terms with a greater amount of leverage. However, this need not necessarily prove a particular problem for governments. For one thing, some of the biggest refinancing gains from PPP transactions came in the early stages of PPP development when the market was less mature and interest rates dropped worldwide to historically low levels. With market maturity, the likelihood of the private sector making huge gains from refinancing falls.

Second, where it makes sense, governments have the option to negotiate with their private partners to share in refinancing gains. Gain clauses can be included in contracts, where the government's share can be either taken as a cash lump-sum at the time of the refinancing or in the form of reduced service charges.⁷³ It is important to recognize, however, that such "clawback" mechanisms, while they may make the profits more politically acceptable, may also result in more expensive contracts upfront.

Third, explicit sharing mechanisms don't necessarily have to be built into the contract for the public sector to share in the gains. General approval rights over changes in contracts or financing arrangements, such as termination liabilities, should put the public sector in a strong negotiating position.⁷⁴ In numerous cases, government agencies have capped the rate of return of the provider and negotiated revenue sharing arrangements. Both can help in certain cases to enhance the long term political viability of the partnership.

When refinancing gains are not shared, such benefits should reflect reward for effectively managing risk and costs rather than a pure windfall gain. The key thing is to seek an equitable outcome that protects the interests of the taxpayer and is defensible publicly.

4. Customers of the Service Will End Up on the Short End of the Stick

Since the infrastructure facilities often are monopolies, the private sector can raise charges as much as they wish on consumers who end up disadvantaged by PPPs.

This is a complicated issue because historically political considerations have often meant that increases in user fees did not keep pace with the rate of inflation for toll roads and other public infrastructure and their associated operational and maintenance costs. This gap contributes to funding shortfalls and deferred maintenance. One goal for many governments in using PPPs—whether explicit or implicit—has been to move the issue of fee increases away from the political realm so that market, rather than political, considerations can guide fee increases.

That said, governments have several options to limit excessive fee increases and protect consumers of the infrastructure. First, fee increases can be limited by contract to the rate of inflation or some other predetermined rate, a common practice for toll road projects, or the government can retain the power to set rates based on objective criteria.

Second, private investment presupposes a revenue stream from which the private investor can earn a return. The revenue stream, however, does not have to consist solely of an interest in tolls or other fees imposed directly on users of the project. In cases where governments want a toll lower than what is needed to service/repay project debt, they can pay an "availability fee" to the private sector to make up for the difference. Great Britain likewise has used "shadow tolling" to support its PFI program.

Governments can also link the payment for the use of the infrastructure to the user's ability to pay. To offset the hardship that particular groups might experience from toll charges, for example, public officials can consider transportation vouchers or other mechanisms, like subsidies, to ease the financial burden, understanding that this will bring in less revenue.

Table 2. Types of Financing

Category	Financing Type	Characteristics
User fees, revenue sources	Tolls	Tolls (or similar user charges for use of a facility) are considered a revenue source for a project, thereby providing a stream of payments that the bidders can use to determine their return on investment and to obtain financing.
	Shadow tolls	Shadow tolls are typically a means by which the government sponsor can make payments, based on usage of the facility, to the private sector operator.
	Availability payments	Availability payments are financial payments from the government to the private partner stipulated in a transaction to make up the difference between the government-imposed user fee (if any) and the cost of usage of the delivered service. Such payments can be in the form of tranches or in one lump sum (such as at the successful completion of the facility or for the agreed-upon maintenance requirements of the facility).

Source: Deloitte Research

For sectors where future needs are less certain, like water and wastewater, the public sector can enter into an arrangement where it buys back the facility from the private partner immediately after it is completed. The public sector can then enter into a long-term leasing agreement with the private sector to operate the facility and sell water to customers at a fixed price. Both the public and the private sector gain from this arrangement and the customer is not adversely affected. The public sector gains ownership of the facility without having to make upfront capital investments; the private sector gains more certainty about its future revenue.⁷⁵

5. Government is Forced to Bail Out PPP Projects When Demand Fails to Meet Projections

Underestimating future demand jeopardizes project returns and the fiscal solvency of the project itself.

As explained earlier, shifting risk to the private sector is a major part of the rationale for PPPs. In the United States, most road PPPs transfer all or most of the demand risk to the private sector. Down under, Melbourne's EastLink project transfers 100 percent of the project risk to the private sector.

To be sure, when the private provider faces problems with demand and is unable to continue the contract, it may terminate the partnership, but it cannot take the facility with it. In most cases, the facility reverts to the public sector.

A variation on the conventional DBFO/M is the DB/FO/M model, a two-stage model used in the Highway 407 project in Canada, which has been successful in bringing projects with uncertain revenue streams to the market. The model is usually employed in situations when there is uncertainty about the future needs. Initially the public sector finances a DB project undertaken by the private partner and later sells the completed facility to a private consortium responsible for its operations. This model is dependent, however, on the availability of public funds.⁷⁶

Endnotes

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