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# Closing the Infrastructure Gap: The Role of Public-Private Partnerships

A Deloitte Research Study

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# Executive Summary

Citizens around the globe confront the world'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 recreational facilities; and deteriorated hospitals, 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 are turning to the private sector for financing, design, construction, and operation of infrastructure projects. Once rare and limited to a handful of countries and infrastructure sectors, these public-private partnerships (PPPs) have emerged as one of the most important models governments use to close the infrastructure gap.

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.<sup>1</sup> 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.<sup>2</sup>

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. Many countries 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 who have moved to more advanced stages. Meanwhile, those countries that are higher up the maturity curve and that have expanded their use of PPPs into new sectors 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 provides incentives for assets to be properly maintained. Fourth, public-private partnerships can lower the cost of infrastructure by reducing both construction costs and overall lifecycle 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.

**Moving up the Maturity Curve.** While PPPs hold significant benefits, they also present formidable challenges, both at earlier and later stages of market development, as countries increasingly apply the PPP approach to infrastructure projects across a number of sectors. A big part of moving up the maturity curve entails improving a government's capacity to execute and manage innovative partnerships. Lessons learned from PPP leaders 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.** Countries that have reached the second and third stages of maturity typically employ partnerships in more than one or two infrastructure areas. The major infrastructure sectors where PPPs have been successfully applied include transport (including road, rail and ports), water, waste, hospitals, schools, public housing, 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 moreover make too 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* governments 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 gaps confronting governments across the world.

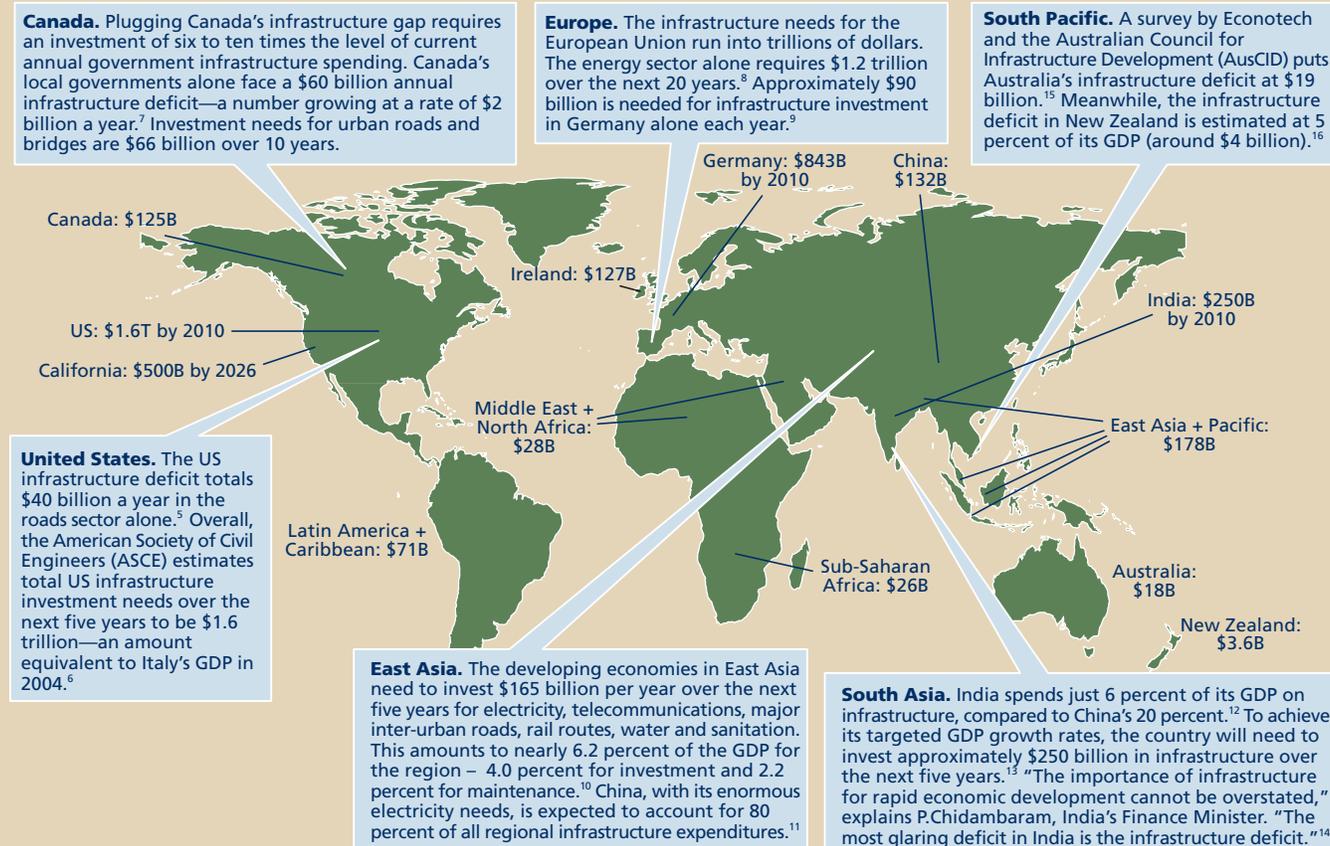


# Introduction

Citizens from New Delhi to New York confront the world's glaring infrastructure deficit daily. From country to country, the large and growing gap between infrastructure needs and the resources governments have historically invested in meeting those needs is obvious everywhere: congested roads; bridges in need of repair; poorly maintained transit systems and recreational facilities; and deteriorated hospitals, schools and waste treatment facilities all in urgent need of rehabilitation and repair (see figure 1). Governments promise many new projects to close the gap, but often do not or cannot find the funding to follow through on their promises.

These problems in turn impose huge costs on society, from lower productivity to reduced competitiveness to an increased number of accidents. The Federal Reserve Bank of Chicago, for example, 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.<sup>3</sup> Meanwhile, in Latin America, the productivity and competitiveness of many regional companies have been lowered because inadequate transport infrastructure has increased logistics costs. In Canada, National Highway System roadways have deteriorated so badly that more than \$17 billion in investment is required to restore them to an acceptable safety standard.<sup>4</sup>

**Figure 1. Projected Infrastructure Investment Needs**



Sources: World Bank, American Society of Civil Engineers, McGill University, ProjectFinance, A&L Goodbody Consulting, RailPage Australia, Business New Zealand, Government of India

Less well understood than the growing infrastructure deficit, however, is the revolution taking place in the way governments are tackling the problem of closing this gap.

In little more than a decade, a paradigm shift has occurred in how governments provide infrastructure. From Tokyo to Toronto, private sector financing, design, construction and operation of infrastructure has emerged as one of the most important models many governments use to close the infrastructure gap. Once rare and relegated to a handful of countries and infrastructure sectors, these public-private partnerships (PPPs) are delivering new and refurbished roads, bridges, tunnels, water systems, airports, schools, hospitals, social housing, and prisons. These PPPs involve long-term contractual relationships between government agencies and their private sector partners for the provision of an infrastructure asset or the delivery of a service (see nearby box “Public-Private Partnerships 101” for a description of the various PPP approaches).

## Growth of a Trend

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.<sup>17</sup> 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.<sup>18</sup>

Yet little more than ten years ago, PPPs were barely a blip on the radar screen, 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.<sup>19</sup> 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.<sup>20</sup> Japan has 20 new PPP projects in the pipeline.<sup>21</sup> In Europe, the volume of PPP deals is doubling, tripling, and even quadrupling year to year in many countries.

Meanwhile in the emerging democracies of Central Europe, PPPs are becoming the delivery model of choice for new infrastructure, with governments viewing the partnerships both as a way to complete projects on time and on budget, and as a means to attract foreign investment. “We are trying to multiply the economic potential of the Czech Republic and implement projects for which the public sector alone has neither the strength nor the resources,” explains Jiri Paroubek, the former prime minister of the Czech Republic. “We are striving to make services accessible to taxpayers that we would otherwise be unable to offer.”

Across the Atlantic, 20 percent of all new infrastructure in British Columbia, Canada is now designed, built, and operated by the private sector. The United States has been slower to take up this trend. However, with more than half the states passing PPP-enabling legislation in recent years and huge PPP projects under way or planned in Texas, Florida and other states, some analysts predict the United States will soon be one of the world’s largest markets for PPPs. In short, the PPP trend is global, accelerating, and encompassing a broad range of infrastructure sectors.

## 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 2).

Many governments are still at the first stage of PPP development including 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 cases—putting themselves and others at risk of repeating earlier mistakes in other jurisdictions.

# Public-Private Partnerships 101

A public-private partnership, or PPP, refers to a contractual agreement formed between a government agency and a private sector entity that allows for greater private sector participation in the delivery of public infrastructure projects. In some countries involvement of private financing is what makes a project a PPP. PPPs are used around the world to build new and upgrade existing public facilities such as schools, hospitals, roads, waste and water treatment plants and prisons, among other things. Compared with traditional procurement models, the private sector assumes a greater role in the planning, financing, design, construction, operation, and maintenance of public facilities. Risk associated with the project is transferred to the party best positioned to manage it. Some of the most common PPP models are described below.

**Design-Build (DB):** 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. After completing the facility, the government assumes responsibility for operating and maintaining the facility. This method of procurement is also referred to as Build-Transfer (BT).

**Design-Build-Maintain (DBM):** This model is similar to Design-Build except that the private sector also maintains the facility. The public sector retains responsibility for operations.

**Design-Build-Operate (DBO):** 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 referred to as Build-Transfer-Operate (BTO).

**Design-Build-Operate-Maintain (DBOM):** This model combines the responsibilities of design-build procurements with the operations and maintenance of a facility for a specified period by a private sector partner. At the end of that period, the operation of the facility is transferred back to the public sector. This method of procurement is also referred to as Build-Operate-Transfer (BOT).

**Build-Own-Operate-Transfer (BOOT):** The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership

of the facility is transferred back to the public sector at the end of that period.

**Build-Own-Operate (BOO):** The government grants the right to finance, design, build, operate and maintain a project to a private entity, which retains ownership of the project. The private entity is not required to transfer the facility back to the government.

**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 some countries, DBFO/M covers both BOO and BOOT.

PPPs can also be used for existing services and facilities in addition to new ones. Some of these models are described below.

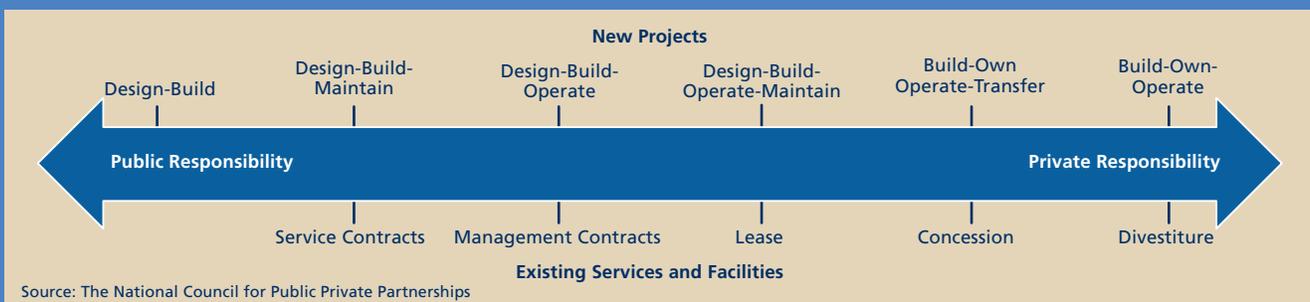
**Service Contract:** The government contracts with a private entity to provide services the government previously performed.

**Management Contract:** A management contract differs from a service contract in that the private entity is responsible for all aspects of operations and maintenance of the facility under contract.

**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.

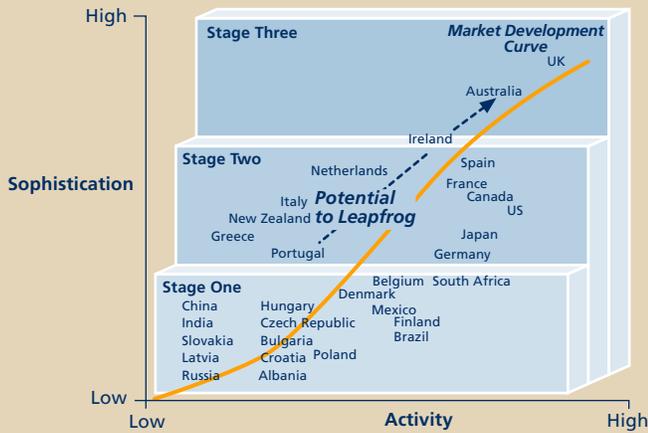
**Concession:** The government grants a private entity exclusive rights to provide operate and maintain an asset over a long period of time in accordance with performance requirements set forth by the government. The public sector retains ownership of the original asset, while the private operator retains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

**Divestiture:** The government transfers an asset, either in part or in full, to the private sector. Generally the government will include certain conditions with the sale of the asset to ensure that improvements are made and citizens continue to be served.



Source: The National Council for Public Private Partnerships

**Figure 2. PPP Market Maturity Curve**



### 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

Instead, countries 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; Australia and Ireland for roads; and the Netherlands for social housing and urban regeneration. Latecomers to the PPP party can avoid some of the mistakes often made in earlier stages of maturity, such as the tendency to apply a one-size-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. This approach would allow them to move up the PPP maturity curve more rapidly and leapfrog to more advanced stages of maturity.

As for those countries higher up the maturity curve, most have only recently begun to use PPPs in more than one or two infrastructure areas. And with the exception of the United Kingdom, many also have experience with only a handful of different PPP approaches. Before these countries expand their use of PPPs into new sectors such as education, health care, and defense, it is important for them to develop a deep understanding of the challenges and potential solutions particular to each infrastructure area.

The purpose of this study then is to provide a roadmap for governments at all stages of PPP development, showing them how to move up the maturity curve and take public-private partnerships to the next stage. This approach, in turn, will enable this relatively new delivery model to play a far larger role in closing the infrastructure gaps bedeviling governments across the world.

Toward this end, we begin with a short discussion of the benefits governments can achieve by using PPPs.

# The Case for Public-Private Partnerships

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

PPPs have shown their potential as an important way to meet these objectives and address infrastructure shortages. For example, 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 responsibility for arranging the financing to the private partner can help deliver infrastructure if a public entity is unwilling or unable to shoulder the full debt or the associated risk of the project at a certain point in time.

Six additional benefits help to explain the strong growth of PPPs.

## 1. Bringing Construction Forward

Conventional procurements typically require the public sector to provide significant upfront capital even though the benefits of the project may be delayed or uncertain. Most forms of PPP enable the public sector to spread the public's cost of infrastructure investment over the lifetime of the asset, much as homeowners do when they take out home mortgages. As a result, infrastructure projects can be brought forward by years, allowing users to benefit from the investment 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.<sup>22</sup> 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.

## 2. On-Time and On-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.<sup>23</sup>

The United Kingdom's National Audit Office reported in 2003 that 73 percent of non-PFI construction projects were overbudget and 70 percent were delivered late. In contrast, only 22 percent of the PFI projects came in overbudget and 24 percent were late.<sup>24</sup>

## 3. 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: some program or crisis requires more urgent funding than rehabilitating an aging road or school. Or a budget deficit may push funding for infrastructure maintenance further down the priority list. Or an upcoming election may lead politicians to delay funding for rehabilitating a wastewater treatment plant to make way for a sexier program or project. Moreover, the effect of reducing spending on maintenance is rarely immediate; politicians who opt to cut back such spending may have left office long before society begins to complain loudly about crumbling roadbeds or overburdened electricity networks.

The result: maintenance is often deferred. In some countries, only 10 percent of the road network is being maintained. California currently carries approximately \$12.5 billion in deferred transportation maintenance at the state level and \$10.5 billion locally.

Such deferred maintenance imposes huge costs in the long run—for example, early intervention costs about 20 percent less than maintenance postponed to the latter quarter of a road’s life. Continual deferral results more safety problems in a shorter infrastructure lifespan, reduced quality of services, and generally worse financial outcomes.

Well-designed PPPs can ameliorate these problems by transferring certain construction and maintenance risks to the private partner. Among the risks that can be assumed by the private partner are:

- Design risk
- Meeting required standards of delivery
- Incurring excessive cost overruns during construction
- Completing the facility on time
- Underlying costs to the service delivery operator, and the future costs associated with the asset
- Industrial action against or physical damage to the asset
- Certain market risks associated with the project

The ability to shift some or all of these risks to the private sector is an important benefit of PPPs. Payment structures require 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 more effective planning and helps to avoid cuts in other service areas as a result of unexpected infrastructure costs.

## 4. 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 asset requirements. A report commissioned by the UK Treasury found in 2000 that among a sample of 29 PFI projects for which public sector comparisons were available, the average savings were close to 17 percent.<sup>25</sup>

In the United States, 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.<sup>26</sup> In Australia, eight Partnerships Victoria projects were on average 9 percent less expensive than under the typical procurement process.<sup>27</sup>

On the other hand, the capital costs can also be higher in certain cases as the private sector tends to take a longer term view of all life-cycle costs rather than a narrow view of the lowest individual costs.

**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 private sector creates a stronger incentive to ensure long-term construction quality because the firm will be responsible for maintenance costs many years down the road. This creates a strong incentive to do preventative maintenance and reduces the risk of future fluctuations in operations costs. This way the public benefits from this life-cycle efficiency. A UK study of benefits flowing from operating PFI projects found that, on average, the government expects to achieve a saving of 17 percent over the whole life cost of services by using the PPP approach, with savings as high as 45 percent in one of the cases.<sup>28</sup>

## 5. Strong Customer Service Orientation

Private sector infrastructure providers, often relying on user fees from customers for revenue, have a strong incentive to focus on providing superior customer service.<sup>29</sup> Moreover, as the asset is no longer managed by the public sector, the public sector is able to concentrate more on ensuring the provider maintains certain customer service levels.

In the case of accommodation PPPs, such as schools or defense facilities, customer satisfaction metrics can be built into the contract to ensure a strong customer orientation. In the United Kingdom, more than three-quarters of end users reported their public-private partnership projects were performing as expected or better than expected; one-quarter said that the facilities were “far surpassing” expectations.<sup>30</sup>

Innovation in customer service delivery helps to account for such high satisfaction levels. Motorists using the Citylink private tollway in Melbourne, Australia, for example, receive alerts when their account is low and can top up their accounts from their mobile phone. A mobile customer service unit traverses the city around the clock, visiting customers at work and at home, helping to install tags and answer account questions. Dissatisfied customers can file complaints with the CityLink Ombudsman, an independent dispute resolution service that investigates complaints and proposes ways to resolve the issues. The private operator has also introduced a customer charter and customer performance scorecard; by measuring CityLink’s performance against charter targets and making the results public, the process has increased transparency and accountability.<sup>31</sup>

In the United States, the owners of the 91 express lanes in southern California hold focus groups to learn more about how to please customers.

## 6. Enabling the Public Sector to Focus on Outcomes and Core Business

When they are properly structured, public-private partnerships enable governments to focus on outcomes instead of inputs. Governments can focus leadership attention on the outcome-based public value they are trying to create. The destination, not the path, becomes the organizing theme around which the project is built.

School PPPs provide a powerful example of how partnerships enable school officials to shift their focus to the core business of learning. When school officials at the Montaigne secondary school near The Hague in the Netherlands needed additional school capacity, they 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.<sup>32</sup> 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.

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 to be an effective infrastructure delivery tool, but a number of projects nevertheless have failed to live up to their advance billing. A big part of moving up the maturity curve entails improving a government's capacity to execute and manage innovative partnerships. Common pitfalls generally fall into these major categories:

- **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 and conditions and expectations of risk transfer on the private sector sponsor and agencies involved that a financially feasible deal becomes impossible to structure. Another is having unrealistic expectations of PPPs—thinking that they provide “free money” or that they're the solution to all problems.
- **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.
- **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 risk model applied to project.** Much of what differentiates the various PPP models is the level and nature 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 even when the private contractor has no control over demand factors.
- **Lack of internal 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 or the dedicated team required to address the time intensive upfront structuring needs.
- **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 creates a non-competitive environment. On the flipside, too few projects may result in industry moving on to a more active jurisdiction.

Taking PPPs to the next stage of maturity 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** (e.g., a clear framework) for partnerships 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, lack of interest from the private sector, and an overly narrow focus on the transaction.

Second, a strong understanding of the **new innovative PPP models** developed to address more complex issues can help governments achieve the proper allocation of risk—even in conditions of pronounced uncertainty about future needs. Proper risk allocation allows governments to better 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.

## 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 3, 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; designing a standard framework to drive down costs; establishing processes for receiving and qualifying candidate projects; outlining the role PPPs will play in the larger infrastructure program; setting the procurement process; analyzing stakeholder interests; and communicating both internally and externally (see Figure 3).

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 government's efforts to engage in PPPs. The main features of a legislative framework conducive to PPPs are outlined in the sidebar box on page 13.

Governments also need to evaluate existing legal systems to ensure that the enabling legislation has the appropriate corporate and commercial laws in place to support private investment. In many countries, private sector involvement in the provision of basic public services is a new concept. Aspects of the broader legal and regulatory environment for services, such as laws governing accounting practices, construction contracts, public works and conventions, and so on, can act as significant barriers to the PPP. Therefore, a thorough examination of the existing legislative and regulatory framework must be undertaken to ensure that there are no distortions in the overall incentive environment (the tax regime, labor laws and banking, foreign exchange, import and foreign investment restrictions).

Figure 3. Infrastructure Project Life-cycle

	Policy and Planning Phase	Transaction Phase	Construction and Concession Phase
<b>Sequential Activities for Infrastructure Delivery</b>	<ol style="list-style-type: none"> <li>1. Condition of infrastructure financial situation</li> <li>2. Legislation/regulation</li> <li>3. Leadership: policy and project management</li> <li>4. Planning: environmental assessments and project opportunities</li> <li>5. Communications: internal and external with major stakeholder groups</li> </ol>	<ol style="list-style-type: none"> <li>1. Transaction process</li> <li>2. Shortlist qualified bidders</li> <li>3. Risk transfer and value for money</li> <li>4. Payment mechanism/performance</li> <li>5. Request for proposal</li> <li>6. Finalize project agreement</li> <li>7. Preferred bidder selection and negotiations</li> <li>8. Financial close</li> </ol>	<ol style="list-style-type: none"> <li>1. Transition to construction (e.g., design/build)</li> <li>2. Construction and monitoring</li> <li>3. Facility operation (contract and relationship management)</li> <li>4. Evaluate whether promised benefits materialized</li> <li>5. Maintenance: hard and soft service provision</li> <li>6. Asset hand back</li> </ol>
<b>Key Activities</b>	<p><b>Establish Objectives.</b> 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><b>Evaluate Alternative Financing Structures.</b> 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><b>Communicate the Benefits.</b> 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><b>Build Market Interest.</b> 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><b>Establish a Realistic Time Frame.</b> 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><b>Secure the Best Value for Money.</b> 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><b>Establish Performance Standards.</b> 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><b>Develop a Draft Project Agreement.</b> 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><b>Establish Construction Governance.</b> 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><b>Monitor Construction.</b> 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><b>Monitor the Concession.</b> 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><b>Prepare Staff.</b> 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><b>Establish the Concession Governance Model.</b> 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>

Establishing a central PPP unit to set policies and drive the process has also proven helpful during the first phase. The government of Victoria state in Australia, for example, set up Partnerships Victoria early in the process to aid in establishing a market for PPPs and setting out detailed policy documents on how the process would work in the state. Similar organizations have been established in British Columbia, Ontario, the United Kingdom and elsewhere. An important function of such organizations is developing standard gateway review processes that each PPP project must pass before the deal can move forward. The purpose: to bring consolidated knowledge, standardized processes and best practices to bear on each transaction, as well as to bring more certainty to the market.

## Features of a Legislative Framework Conducive to PPPs

- Give public entities considerable flexibility in the types of agreements they may enter into and in 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” (such as 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 further legislation to authorize or finance a project, execute a franchise agreement or change toll rates.

Source: Nossaman, Gunther, Knox, & Elliot

**Transaction phase.** With more than 2,500 kilometers of roads, Birmingham is known as Britain’s motor city. Years of deferred maintenance and insufficient investment, however, have left the roads in this major transportation hub in relatively poor shape—12 percent of the city’s road network has less than five years of remaining life. Moreover, congestion imposes huge costs to businesses operating in the region—estimated costs at about £1.5 billion a year in wasted time and fuel alone.

To address this problem, Birmingham is planning to turn over the city’s entire road network to the private sector in a truly unique public-private partnership.<sup>33</sup> The project requires the private contractor to upgrade the highway infrastructure to a specified set of standards and then maintain them over the 25-year concession period. The contract will cover all aspects of road structure, including lighting, drainage, bridges and tunnels. The goal: to create more certainty around the long-term maintenance and upgrade of all aspects of the road and bridge infrastructure.

Realizing this goal is easier said than done. The government needs to get a whole series of things right during the transaction phase (and subsequently during the construction and concession phase) to ensure the success of this approach. 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.<sup>34</sup> The emphasis is to manage a competitive procurement that provides the best value for the public owner and meets the specific requirements of the project within defined procurement rules.

An important requirement of the transaction phase is protecting 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 the government must protect? How can public officials maintain the integrity of these values? Answering these questions requires working through important issues, such as access to services, cost to citizens, fairness and equity, conflicts of interest, 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 (see figure 3), 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 partner in order to achieve the public goals and objectives for the project.

A critical element of this phase is setting up an effective governance structure for the partnership. Public officials must be careful to retain control of outcomes even while their private partners directly manage operations and services. This requires a delicate balancing act, building in the needed flexibility to enable dynamic change, while not becoming a captive of private vendors. Toward this end successful partnerships typically establish some kind of forum where contractors, government officials and stakeholders come together to solve problems and resolve conflicts.<sup>35</sup> Success depends on quickly identifying and resolving any points of friction. Joint governance structures that address strategy, management and organizational activities can frame a successful partnership by setting out the overall vision, bringing bones of contention between the public and private partners to the forefront early on, anticipating problem areas and establishing a way of handling them.

Many local governments in the United Kingdom have established partnership boards to maintain direct contact between private service providers and government agencies working in public-private partnerships. The boards provide a forum where government officials and their partners craft mutual objectives, articulate local priorities and make joint decisions. The forums are also a good way to track results which in turn helps build public sector support for future PPP projects. Understanding that not all partner issues need necessarily rise to a board level, some governments have even created multiple partnership governance arrangements.

It must also be recognized that asking private partners to produce government services places more—not less—responsibility on public officials. It requires governments, often with declining resources, to provide more public service than before, but produce less of it themselves. This in turn

demands a different set of governmental abilities: managers skilled in negotiation, contract management and risk analysis who will tackle problems unconventionally and focus on results rather than on defending bureaucratic turf.

The presence of a small cadre of managers with strong relationship 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.

## 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.

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.<sup>36</sup> 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.

## 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 sector agree to jointly design, develop, and finance the project. In some cases they also work together to build, maintain, and operate the facility.

**Bundling.** 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.

**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.

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

“Over the last few years we’ve been investing heavily in the full range of infrastructure projects, including hospitals and schools, freight and transport infrastructure, major water projects and science, technology and innovation infrastructure. And we’ve learned some lessons along the way. Perhaps most importantly, we’ve learned the value of not being locked into one model of delivery when it comes to large-scale infrastructure projects.”

– The Honorable John Brumby, MP, Treasurer of Victoria, Australia<sup>37</sup>

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.

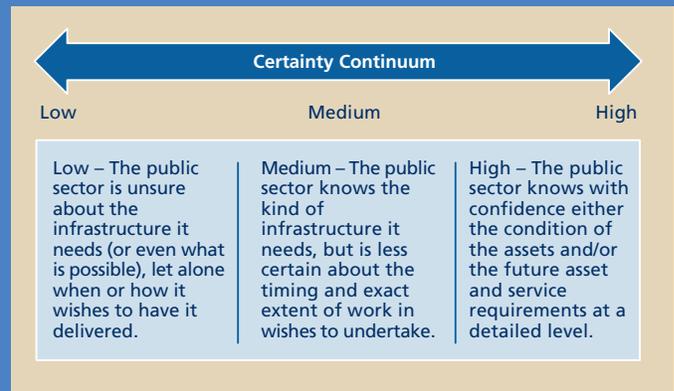
Fortunately, recognition of these challenges has served to fuel innovation rather than frustrate further development. To accommodate varying degrees of uncertainty about the future and to lower transaction costs, many new PPP approaches have been developed, thus expanding the options available for procurement. Between conventional procurement and full privatization a wide range of financing and delivery options

# Choosing the Right Delivery Model

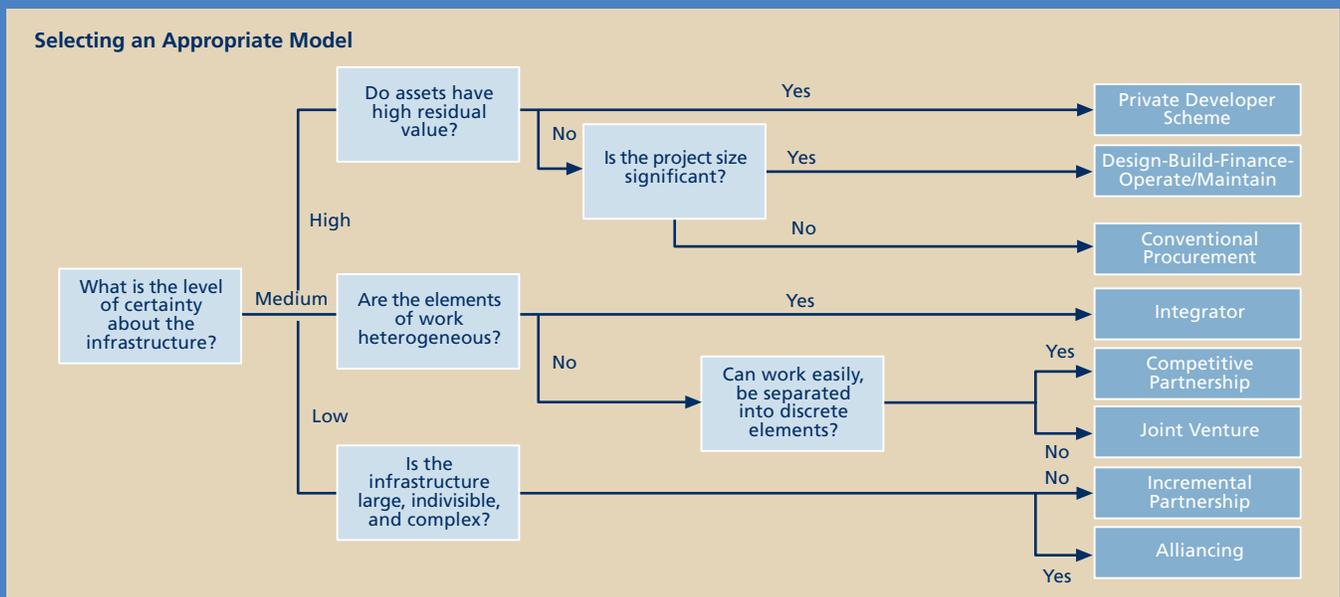
## Key Questions

- 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.

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, for example, 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.

## Unlock Value from Underutilized Assets

Greystones, a small town on the Irish coast, is on the verge of becoming a popular tourist destination and upscale community for Dublin, Ireland's biggest city, which is only 29 kilometers (18 miles) away. There is just one problem: Greystones' local harbor, a big potential draw, is in a sorry state. It is badly in need of redevelopment, but no investment has occurred for years. The county council doesn't have anywhere near the \$40 million–\$50 million budget required to fund improvements in the harbor.

What the county lacks in financial assets, however, it makes up for in physical assets. It owns a swath of property overlooking the harbor—home to an old waste dump and some parkland—as well as some land *in* the harbor that could be reclaimed. With Dublin booming and growth spilling out into the nearby suburbs, the land is far more valuable to a private developer who could build harbor-view condominiums than it is to the county. So the county decided to convert its underutilized physical assets into a financial asset by seeking bids from the private sector to rebuild and then operate and maintain the harbor for 30 years in exchange for getting development rights to the land. To ensure that the developer completes the harbor improvements in a timely manner, it is prohibited from constructing residential units until the improvements are done.

The county will realize a host of benefits from this innovative model. The harbor will be built quickly, spurring economic development faster than would otherwise have been possible. Long-term maintenance risks are shifted to the private sector. And the county releases greater value from the land than would be possible under government ownership—all without spending any tax revenues.

This example points to an important and growing strategy for getting the biggest bang from PPP projects: unlocking value from undervalued and underutilized assets. Savvy governments increasingly are taking a close look at their full portfolio of assets and determining 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.<sup>38</sup>

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.<sup>39</sup>

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.<sup>40</sup> 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.

Given the level of uncertainty about future accommodation requirements and the fact that land values are subject to factors beyond MoD's control, a classic PPP approach would have been either unbankable or unacceptably expensive. A new approach was needed to deliver MoDEL.

The MoD's approach has been to appoint an integrator (termed the Prime Plus Contractor) who will take the principal risk for delivering the initial phases of the project and competitively procure subsequent work for the ministry. The integrator has been given incentives to maximize net receipts from sale of the surplus property and is responsible for ensuring that schedules and quality standards are met. The integrator will carry out specified works at a fixed price determined through competition but will be prohibited from competing for later, as yet unspecified, works.

The cash from the sale of surplus sites is paid into project-specific accounts the Ministry of Defense controls. Sales proceeds are used to pay debt, direct project costs, and the contractor's management fee for delivering the project. Any amount in excess of a guaranteed minimum payment is shared by the MoD and the contractor according to a predetermined profit-sharing mechanism, thus providing a strong incentive to the contractor to maximize revenues over time.

# Sector Opportunities and Challenges

Another key feature of a more advanced PPP environment is the application of the concept to multiple infrastructure sectors. Countries 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 considerable some certainty 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.

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 1).

## Transport

Public-private partnerships have played an increasingly central role in answering the pressing need for new and well-maintained roads, tunnels, bridges, airports, ships, railways, and other forms of transportation. Internationally, transportation has been far and away the largest area of PPP investment.<sup>41</sup>

Several factors make most transportation infrastructure ideal 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 in many countries of associated user fees for assets such as roads and bridges makes private financing easier in this sector than others where the government must pay the private sector a fee for providing the service. The ability to limit participation to paying customers, in the form of train tickets or bridge tolls, ensures a revenue stream that can offset all or some of the cost of provision in many countries—a format readily understood by the private sector. Third, the scale and long-term nature of these projects are well served by PPPs.

Australia's transport sector was one of the first to use PPPs to deliver infrastructure, with the states of Victoria and New South Wales pioneering public-private road partnerships. Sydney now has the world's largest network of urban toll roads. As of October 2005, approximately 25 percent of all contracted PPP projects within Australia were related to the transport sector.<sup>42</sup>

Spain and Italy also have considerable experience using PPPs for roads. Most of the existing toll highways in Spain were put out to concession in the 1960s.<sup>43</sup> Today, the government hopes to use PPPs to fund one-third (\$113 billion) of the estimated investment needed in road and rail between 2006 and 2020.<sup>44</sup> Similarly, the transportation sector makes up the bulk of PPPs in Italy (with a value of \$11.4 billion).<sup>45</sup>

In the United States, a \$21 billion investment in 43 major highway facilities has been undertaken using various public-private partnership models over the last dozen years. California, Florida, Texas and Virginia are leaders in this field, accounting for 50 percent of the total dollar volume (\$10.6 billion) through 18 major highway PPP projects.<sup>46</sup>

**Table 1. PPP Sector Opportunities**

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

## 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: Availability Payments

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 Department of Transportation has proposed 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 transport 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 transport agency 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 agency through revenue raised on the container and passenger fees. The payments would be tied to the availability of the tunnel (meaning its being open for operation and available to users) in addition to quality measures—but not to the specific number of vehicles passing through. The payments would also rise if traffic exceeded certain threshold levels to compensate the private partner for 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, traditionally the province of state and local government, represents another fast-growing area for PPPs. Many countries have started to use PPP structures to privately finance needed investment in these sectors.

The total value of water and wastewater PPP projects in the Australian states of Victoria and New South Wales is approximately \$131.5 million.<sup>47</sup> 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.<sup>48</sup> In the 1990s, a few pioneering municipalities such as Moncton, Hamilton, and Dartmouth initiated Canadian PPP projects.<sup>49</sup> Meanwhile, in Ireland, more than 100 water and wastewater PPP projects (most of them design-build projects) are either operational or in construction and planning.

The largest European water PPP is in the Netherlands, where the Water Board of Delft land awarded a 30-year concession, with a total contract value of €1.58 billion. The project includes the design, construction, and operation of a new wastewater treatment plant and, to comply with more stringent discharge requirements, the refurbishment and operation of an existing wastewater treatment plant.



## 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.

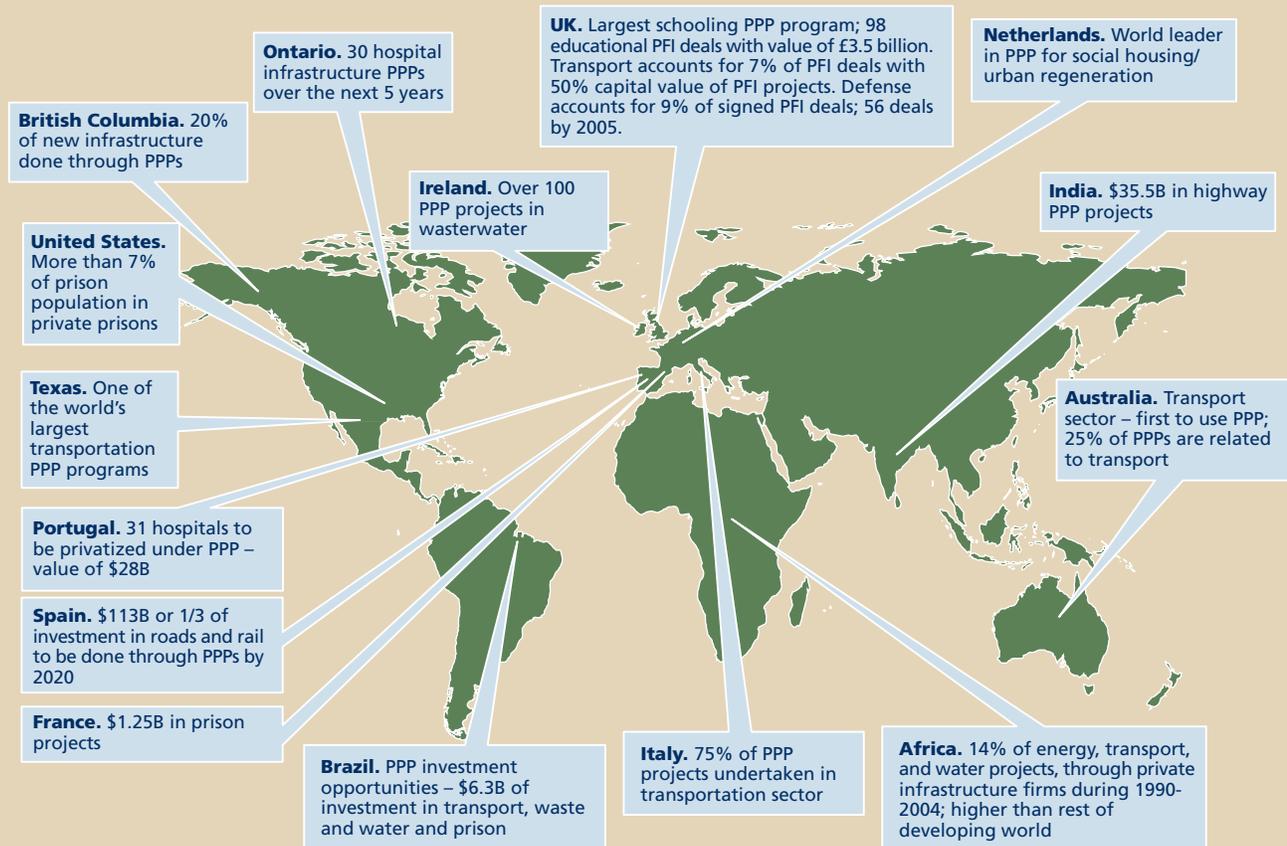
**Politics.** Water and wastewater are often seen as falling squarely under the public sector domain. Public employees may have deep concerns for their welfare under the new management.

### 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.

**Figure 4. PPP Sector Highlights Around the World**



Sources: Australia National Public Private Partnership Forum, HM Treasury, e-Privatization.com, Projects Today, Public-Private Infrastructure Advisory Facility, EuroMoney, Infrastructure Journal, Deloitte Research.

## Education

PPPs can deliver substantial innovation to education infrastructure and service delivery. While arrangements differ, 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 school facility transfers to the government. Under typical education PPPs, the private sector invests in the school infrastructure and provides related noncore services (school transport, food services, cleaning, and so on), under contract while the government continues to provide core services, namely, teaching.<sup>50</sup>

The United Kingdom is home to the world's largest and most sophisticated PPP schools program. Most new schools and tertiary education institutions are built under the PFI or some of its variants. All in all, nearly 100 education PFI deals valued at £3.5 billion have been signed. 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 21<sup>st</sup> century standards through a program called Building Schools for the Future. A \$37 billion investment in new buildings and refurbishment will be delivered through a combination of joint venture models and more traditional design-and-build contracts, information technology and communication contracts, and facilities management contracts.<sup>51</sup>

Meanwhile, a very successful first round of PPP school projects in New South Wales, Australia, prompted state government officials to pledge to use PPPs for all future school buildings in the province. A recent report by Standard & Poor's showed increasing investor interest in education PPPs in Australia, with projects valued at \$3.7 billion in the pipeline.<sup>52</sup>

A cautionary tale lies in the Nova Scotia, Canada, experience where PPPs were used to build 39 schools in the late 1990s. 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 driven by project "gold plating" (that is, increasing school standards, expensive site selection), weak government management, and problems with the contract terms.<sup>53</sup> Today privately operated schools represent approximately 14 percent of the square footage in the province's schools.

## 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, in which the government purchases the school building from the private partner once it has been completed and then contracts back for maintenance services.

## Hospitals

In recent years, a number of countries have aggressively moved to diversify the sources of health care funding by using PPP arrangements to meet the growing demand for health care infrastructure. Typically, a private consortium designs, builds, owns, and operates a hospital and leases it back to the relevant government entity—such as a hospital board—for a period of 20 to 60 years.

Since 1997, 85 percent of funds for major UK National Health Service projects have come under the PFI scheme.<sup>54</sup> The total number of PFI hospital projects, 130, dwarfs the 12 publicly funded hospital projects developed during that time. Clinical services and some cleaning and catering-type functions usually remain the responsibility of the public sector, while the private sector builds and operates the facilities. Contract terms are generally 30 to 35 years.

In Portugal, 31 hospitals will be built using PPPs. The entire program, at an estimated cost of \$37 billion, should be complete by 2014, with 10 new hospitals launched in 2006.<sup>55</sup> The contract covers the design, construction, financing, maintenance, and operation of the facilities as well as hospital management and some clinical services.<sup>56</sup> Meanwhile, in Ireland, a survey in 2005 of private infrastructure providers identified hospitals as the sector with the most potential for PPP development: 79 percent of respondents ranked it first on their preference order for PPP development.<sup>57</sup>



## Hospital PPPs: Challenges and Solutions

### Challenges

#### **Uncertainty around future public health care needs.**

The ever changing nature of both health care demands and medical practice introduces uncertainty into the procurement decision. Aging populations, for example, exhibit different health care needs than previous populations. As such, health and hospital procurement strategies must be flexible enough to meet changing demands.

**High procurement costs.** Hospital PPPs often face high procurement costs, given the modest scale of most projects. Individual hospitals require substantial investment but may offer relatively small returns compared with the expense of procurement.

**Politics of private ownership.** The politically sensitive nature of health care implies that models where the public sector retains ownership and operation are sometimes most appropriate.

**Who provides the clinical services.** This is the most costly element of healthcare. Value for money can be achieved by transferring clinical care, however, doing so is often complicated and politically difficult.

### Solutions

Health technology advances at an astonishing rate. Existing hospitals must be flexible enough to accommodate new technology and willing to invest continually in new medical services. This requires PPPs to pay careful attention to life-cycle issues such as goal alignment, trust, and flexible governance structures that can accommodate change.

The choice of a financing and delivery model is also critical. The integrator model allows the public sector to introduce the disciplines of private finance, while retaining the required level of flexibility over project design. This might be particularly suitable for a program of upgrade and refurbishment.

The political sensitivity of private ownership can be ameliorated through a clear separation between core hospital services (medical services), which remain in public control, and ancillary ones (such as cleaning and maintenance), which may be outsourced as part of the arrangement.

## Public Housing, Land and Area Development

In Australia and Ireland, the central governments have encouraged the use of concession models in their pilot PPP public housing projects. But the country with the deepest experience in this sector remains the Netherlands, which has been applying PPPs to social housing and regeneration projects for nearly two decades. Joint venture, the most commonly used PPP arrangement for these projects, suits the local governments' need to retain control over planning and development while utilizing the private partners' available resources and expertise. PPP contracts typically last for 5 to 10 years, after which the land owner (the government or the private partner) takes ownership of the project. This model proved quite successful for more than 100 locally initiated projects in the Netherlands.<sup>58</sup> The cooperation needed to make joint ventures work have proven to be especially successful tools in breaking deadlocks with private developers that arise because land in crowded Holland is scarce.

The Dutch central government has also introduced key PPP projects in urban regeneration. These projects, are centrally administered, with continued involvement by local governments.<sup>59</sup>



## Housing and Development PPPs: Challenges and Solutions

### Challenges

**Uncertainty.** Housing projects involving refurbishing or upgrading often face uncertainty about the condition of existing housing stock. Where the public sector is unable to provide accurate or detailed estimations about the extent of upgrade work required, private partners usually charge risk premiums that inflate the project cost.

**Demand forecasting.** The difficulty in precisely forecasting the number of housing units needed for new builds, refurbishments and maintenance poses a serious challenge for the public sector. This also affects private partners, as their revenue streams might be limited or reduced depending on the number of residents who exercise their option.

**Goal alignment.** The large number of stakeholders involved (citizens, shop-owners, private developers, municipality, and so on) in regeneration and area development projects makes it relatively difficult to come up with a project that sufficiently meets the interests of everybody involved.

### Solutions

The challenges in this sector are often addressed by using alliancing models, such as a joint venture in which the public and private sector jointly design, develop, and finance a project. A jointly financed approach can facilitate risk and cost sharing, especially in the multidimensional sector of area development. In some projects, both sectors also work together on the construction, maintenance, and operation of a facility. This form of partnership is not limited to a single party; in fact, many alliancing projects are constructed with multiple partners. Sometimes, within the alliancing structure, traditional procurement or other PPP delivery models such as DBFM are also used at different phases of the partnership contract.

Another frequent technique is allowing alternative revenue sources into the project. For housing projects, this means granting private partners the right to build and sell private houses, or other commercial facilities, in the same area as the public housing.

## Defense

PPP projects in the defense sector include equipment maintenance and installation, supply chain integration and operational support, depot maintenance, specialized military training and real estate management (land development, privatized housing and base closures and development). The projects typically are designed to overcome fiscal constraints, manage life-cycle costs, and reduce pressure on military personnel.

The UK Ministry of Defense has employed various PPP models for more than 56 defense projects—everything from building military accommodations to training personnel to putting up satellites. Total value: £4.65 billion.<sup>60</sup> The German defense ministry has likewise initiated a number of innovative defense PPPs. An Army maintenance joint venture with HIL GmbH involves the entire value chain for 10,000 combat systems (not including system purchase). Under the terms of the eight-year contract, HIL GmbH must ensure that 70 percent of all combat systems are available for use at all times.<sup>61</sup>

Meanwhile, in the United States, the bulk of defense PPPs have involved either military base closures or military housing redevelopment and privatization. The Army's Hawaii Family Housing project, a joint venture between the Army and Actus Lend Lease, involves building 7,894 military housing units at seven Army installations on Oahu. The 50-year lease provides for \$1.6 billion in housing delivered by the private sector partner over a 10-year period.



## 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 state and federal inmates in the U.S. are in private facilities, the highest number of prisoners in private prisons in the world. Australia, on the other hand, has the highest proportion of prisoners in private prisons with 28 percent of them in contract managed facilities.<sup>62</sup>

Elsewhere, Britain now has 10 prisons run by private companies, 8 of them built under the PFI. These buildings are leased back to the prison service for a period of 25 years after being designed and constructed by commercial groups.<sup>63</sup> The results have been generally positive: Construction times have dropped by more than 40 percent; costs by 20 percent. The cost savings are equivalent to building 20 new secondary schools or three new general hospitals.<sup>64</sup>



## 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.<sup>65</sup> 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

The infrastructure challenge before governments today may seem overwhelming. The historical boom-and-bust spending cycle has created huge infrastructure deficits around the world, the consequences of which are significant for both citizens who have to deal with decrepit facilities or long delays before new infrastructure is delivered, and governments fighting to stay competitive in today's flat world.

Slowly governments are realizing that inaction is simply not an option. PPPs alone are not a panacea. Rather, they are *one tool* governments have at their disposal for facilitating infrastructure delivery—a tool that requires careful application. 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 their development. This development, in turn, will enable this relatively new delivery model to play a far larger role in closing the infrastructure gaps bedeviling governments across the world.



# Appendix: Answers to the Most Common Objections to PPPs

Objections to PPPs tend to be markedly similar across countries. 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 8).<sup>66</sup> 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.<sup>67</sup>

**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.<sup>68</sup> 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.<sup>69</sup>

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.**

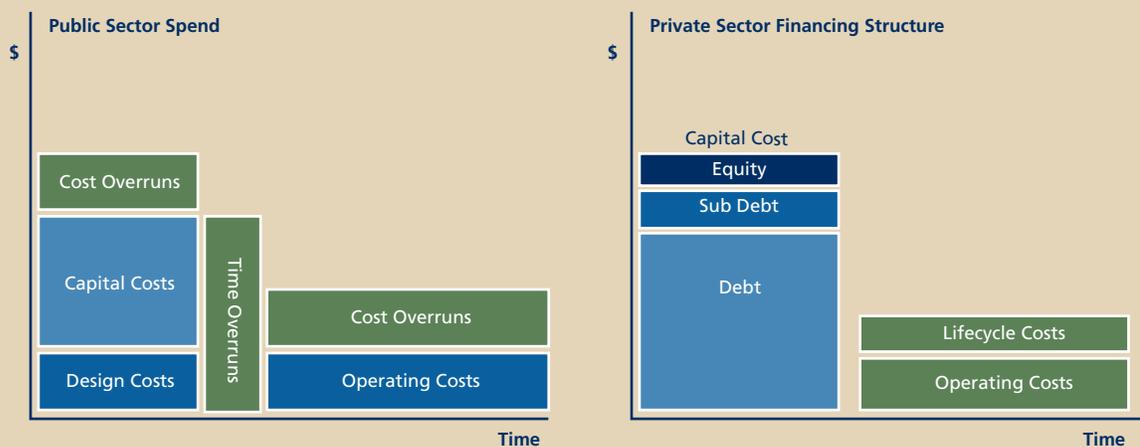
The issue of value for money should be an important feature of any public infrastructure project, though it gets more emphasis with PPPs. Value for money is based on the theory that the private sector brings in benefits and efficiencies that outweigh its higher borrowing costs. In analyzing value for 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.”<sup>70</sup> A more recent

survey of Scottish local government authorities made similar findings.<sup>71</sup> 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.<sup>72</sup> In the case of smaller projects, “bundling” helps to spread procurement costs across several discrete projects.<sup>73</sup>

**Figure 8. 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.<sup>74</sup> 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.<sup>75</sup> 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 waste, 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.<sup>76</sup>

## 5. The 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.<sup>77</sup>

## Endnotes

- <sup>1</sup> Grahame Allen, "The Private Finance Initiative (PFI)," Research Paper, Economic Policy and Statistics Section, House of Common Library, December 2001, (<http://www.parliament.uk/commons/lib/research/rp2001/rp01-117.pdf>).
- <sup>2</sup> World Bank Infrastructure Governance Roundtable, UK, PPP Forum ([www.worldbank.org/.../presentations/UK%20-%20PPP%20Beazley%20Long%20-%20On-YeeTai%20PRESENTATION.ppt](http://www.worldbank.org/.../presentations/UK%20-%20PPP%20Beazley%20Long%20-%20On-YeeTai%20PRESENTATION.ppt)).
- <sup>3</sup> From an average of 2.8 percent between 1958 and 1969, to 1.4 percent between 1970 and 1986. See Robert Rider, "Maintaining Wisconsin's Competitiveness—Corridors 2020," Central Wisconsin Economic Research Bureau, 1<sup>st</sup> Quarter 1991 ([http://www.uwsp.edu/business/CWERB/1stQtr91/SpecialReportQtr1\\_91.htm](http://www.uwsp.edu/business/CWERB/1stQtr91/SpecialReportQtr1_91.htm)).
- <sup>4</sup> "Infrastructure Renewal in Canada," Mississauga Board of Trade, Approved by the Canadian Chamber of Commerce at the 75th Annual General Meeting on October 30, 2000 (<http://www.mbot.com/news/articles.aspx?id=4>).
- <sup>5</sup> The needs of the roads sector are \$94 billion annually, but only \$59 billion is now being invested each year.
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