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POLICY PAPER

Strategies for effective procurement and public-private partnerships in the transport sector

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Introduction

Around the world, investments in transport infrastructure have risen to the top of the urban policy agenda. Effective urban mobility provides the foundation for economic prosperity, environmental sustainability, and social inclusion. It is now widely understood that after decades of underinvestment, there is a vast need for cities globally to upgrade and expand their roads, bridges, tunnels, airports, seaports and public transit systems. The Global Infrastructure Outlook predicts that by 2040 there is a global need for nearly \$50 trillion in transportation investments worldwide to keep pace with rapid population growth and support sustainable economic development.¹ Much of this investment is required in cities, particularly in the middle income and developing countries.

Against this backdrop, this paper presents evidence on the strategies to most effectively procure large transport infrastructure projects, and explores the lessons learned about using public-private partnerships (PPPs) worldwide.

Effective urban mobility provides the foundation for economic prosperity, environmental sustainability, and social inclusion

WHY PUBLIC PROCUREMENT?

Public procurement of infrastructure and services, rather than private provision, is often necessary to provide optimal levels of:

- Certain types of goods that have strong positive effects on wider society, and not just on users,
- Goods whose use cannot be 'excluded', such as public parks and street lighting
- Socially beneficial goods that are more efficiently provided by only one supplier because of their high capital costs, such as water services and electricity.

The first section provides a general introduction to procurement in the transport infrastructure sector, and provides an overview of the application of PPPs. Based on the material presented in the introduction, the paper will identify 6 key lessons for policymakers to achieve effective procurement and PPPs in the transport sector.

¹ See the Global Infrastructure Outlook at: <https://outlook.gihub.org>

Procurement Foundations

Opportunities

In an era of economic uncertainty and tight government budgets, investments in transport infrastructure remain popular amongst policy makers and politicians because of the substantial benefits they can deliver to society. Infrastructure investments provide short-term economic stimulus and job creation, and they create a building block for long-term economic competitiveness, growth and productivity. Investments in sustainable transport such as urban public transit, cycling and pedestrian facilities can reduce air pollution and lower fuel consumption. And transport projects can improve road safety and provide critical connections to employment, recreation and services throughout the city.

Infrastructure investments provide short-term economic stimulus and job creation, and they create a building block for long-term economic competitiveness, growth and productivity

Challenges: project selection, funding and delivery

However, the positive benefits of transport investments are only realized if the ‘right projects’ are selected, and these projects are effectively delivered. Effective transportation projects are those that improve accessibility, increase productivity, have minimal impact on the environment, and enhance liveability. Worldwide, however, there is an implicit political preference towards building new high profile infrastructure rather than investing in the maintenance and rehabilitation of existing facilities. This can lead to depreciating assets and long-term safety concerns as infrastructure falls below the state of good repair.

Moreover, infrastructure in developing countries financed through repayable loans as opposed to non-repayable grants has become a major source of national government debt. A recent report by Harvard University’s Belfer Center for Science and International Affairs has highlighted the high levels of debt that some developing countries such as Sri Lanka, Djibouti and Pakistan are taking on through China’s Belt and Road initiative to finance infrastructure. This borrowing of billions of dollars creates long-term financial obligations to repay loans that are in some cases unaffordable on commercially unviable projects, and creates financial challenges for the government sponsors (See case study 1).²

Infrastructure in developing countries financed through repayable loans as opposed to non-repayable grants has become a major source of national government debt

Loans to fund infrastructure in middle-income and developing countries by OECD and other developed countries as well as international development banks and private investors, have also historically contributed to unsustainable levels of debt. One manifestation of this was the Latin American debt crisis in the 1980s. These findings reinforce the fact that unaffordable projects built in the wrong location, at the wrong time, using unproven or outdated technologies

Unaffordable projects built in the wrong location, at the wrong time, using unproven or outdated technologies will do very little to realize economic growth

² See: <https://www.belfercenter.org/sites/default/files/files/publication/Debtbook%20Diplomacy%20PDF.pdf>

will do very little to realize economic growth, further environmental sustainability or social inclusion, and can actually worsen the financial position of their government sponsors.

CASE STUDY 1: HAMBANTOTA PORT, SRI LANKA

One recent high profile case is the development of a new major port that the Sri Lankan government financed with loans from a Chinese state owned company in Hambantota, which until a decade ago was a small fishing village. When the port failed to be commercially viable the Sri Lankan government struggled to repay the loans. Ultimately a new incoming Sri Lankan government handed over control of the port and 15,000 acres of adjacent land to a Chinese state owned company on a 99-year lease in order to lessen their overall national debt burden.

Indeed, there is now extensive evidence that the financial viability of large infrastructure projects are threatened by poor project delivery. According to research by Bent Flyvbjerg, 9 out of 10 transport mega-projects worldwide experience cost overruns, with final construction costs on average 28% above the initial estimate. Lengthy and disruptive construction delays are also common. Conversely, demand and revenue shortfalls are common on transport projects, creating financial strains on the asset owner.³ As one example, in Johannesburg ridership on the Rea Vaya bus rapid transit system is less than half of the 162,000 riders that project planners estimated. The Rea Vaya bus rapid transit system requires a government subsidy to cover nearly 70% of its operating costs (See case study 2).⁴ Similar ridership shortfalls and government subsidies have been experienced with bus rapid transit systems in Accra and Cape Town.

9 out of 10 transport mega-projects worldwide experience cost overruns, with final construction costs on average 28% above the initial estimate

Against this backdrop, implementing strategies to improve project selection can deliver significant societal benefits, including:

- Higher usage of infrastructure;
- Better alignment of investments with environmental and social goals
- Reduced costs and delays during infrastructure delivery
- More financially sustainable projects, with improved cost recovery

³ Flyvbjerg, B., Bruzelius, N. and Rothengatter, W. (2003). *Megaprojects and Risk*. Cambridge: Cambridge University Press.

⁴ Scoria, H. and Munoz-Raskin, R. (2017). Why South African Cities Are Different? Comparing Johannesburg Rea Vaya Bus Rapid Transit System With Its Latin American Siblings. <http://pubdocs.worldbank.org/en/900101490196071185/Draft-Manuscript-Why-South-African-BRTs-are-different-ForConnectNote-Feb.pdf>; Venter, I. (2018). No longer flavour of the month, SA rethinks its bus rapid transit systems. *Engineering News*. Retrieved October 11, 2018, from: http://www.engineeringnews.co.za/article/no-longer-flavour-of-the-month-sa-rethinks-its-bus-rapid-transit-systems-2018-07-27-1/rep_id:4136

CASE STUDY 2: REA VAYA BRT, JOHANNESBURG, SOUTH AFRICA

In 2009, Johannesburg opened the first bus rapid transit system (BRT) in Africa. Planners in Johannesburg were inspired by the success of BRT systems in Latin America, which provide low cost, reliable, safe mass transit with very high ridership. At the time, there was great optimism that the new Rea Vaya BRT would improve urban mobility, support economic development, contribute to poverty alleviation, and be a vehicle to restructure the divided urban form of the apartheid era city. Indeed, the Rea Vaya BRT was presented as an African showcase for an innovative transportation technology that had become popular in cities in middle and low income countries.

Despite the promise, the Rea Vaya BRT has struggled to meet expectations. Johannesburg is considerably more spread out and has population densities that are less than half of the typical Latin American city. The result is that in Johannesburg the average BRT passenger trip distances are longer and more expensive to serve than in Latin America. Ridership has fallen well below forecasted levels, and the Rea Vaya BRT system has required substantial subsidies to cover 68% of all operating costs. By comparison the BRT systems in Lima and Bogota make an operational profit. In the face of poor performance and low cost recovery for the BRT in Johannesburg as well as similar experiences in Cape Town, after years of promoting BRT South African cities are reconsidering the roll out of such systems (Sources: Scoria and Munoz-Raskin, 2017; Venter, 2018)



Empty BRT Shelter in Johannesburg. Photograph by Keizers.

Overview of Public-Private Partnerships

Once the optimal project is selected, strategies are required to effectively procure and operate the asset. As shown in Figure 1, the models for procuring large transportation projects range on a spectrum from greater public to greater private sector responsibility.

At one end of the spectrum are models of direct public procurement known as design-bid-build. In this model, the government project sponsor is responsible for overseeing the facility design, hiring a contractor and managing the construction, financing the project through publicly issued debt or bonds, and running the facility operations and maintenance.

- This procurement model has the advantage of maintaining a high level of public control over the facility design and operations.
- However, in direct procurement models such as design-bid-build, the public sector sponsor bears significant risk related to construction cost overruns, delays, facility unavailability and lower than expected demand and revenues from user fees, as the private sector does not have any of their own money at risk as they have not invested.
- Governments often underinvest in long-term facility maintenance as attention focuses on new high profile capital projects.
- Heavily indebted governments struggle to attract investors to finance the capital costs of building large infrastructure projects.
- Countries are required to account for the capital cost of large infrastructure on their balance sheet at the time that the investment is made, worsening the appearance of their economic condition.

PPPs, by comparison, represent a shift towards greater private sector responsibility and risk for project delivery. In PPPs, some combination of facility design, construction, financing, operations and maintenance are **bundled into a contract** with a single concessionaire, which is typically a consortium of construction, operations and investment firms. As the number of project delivery functions taken on by the private sector increases, so too does the amount of risk they assume. PPPs in the transport sector involve a long-term contract, where the concessionaire finances some or all of the up-front capital cost of building the project. The concessionaire recoups their initial investment either from user fees or predetermined scheduled payments from the public project sponsor over a facility operating contract that typically lasts between 10 and 99 years.

As the number of project delivery functions taken on by the private sector increases, so too does the amount of risk they assume

Global Experience with PPPs

Over the past 25 years, PPPs have grown in popularity and become the model of choice for delivering large transport projects in many countries. Worldwide, over 1,100 transport PPPs valued at over \$650 billion have been built or are currently in the project development process. PPPs have been used in 134 countries, and the World Bank estimates that between 15-20% of all infrastructure investments worldwide are now made through PPPs.⁵ The motivations for using PPPs to deliver large transportation infrastructure have varied by country and evolved over time:

The World Bank estimates that between 15-20% of all infrastructure investments worldwide are now made through PPPs

Potential benefits of PPPs

- Promoters have proposed PPPs as a strategy for cash strapped governments to tap private capital to fund public infrastructure.
- More recently, PPPs have been identified as drivers of value for money in public procurement. PPPs achieve value for money by spurring innovation, enabling risk transfer to the private sector, and a focus on complete lifecycle asset management. Cost overruns on directly procured infrastructure are on average 24% greater than for PPPs.⁶

Despite such claims, the global record with transport PPPs has been decidedly **mixed**. High profile projects such as the TransMilenio rapid bus system in Bogota and the Canada Line rapid transit system in Vancouver are widely recognized successes. The TransMilenio rapid bus system in Bogota moves 1.7 million riders per weekday, and recovers 117% of its operating costs from fares (See case study 3).⁷ And the Canada Line has exceeded ridership forecasts of 100,000 passengers per day, and has spurred land use intensification along the line. The design-build-finance-operate-maintain style PPP for the Canada Line effectively transferred construction and service availability risk to the private sector, while the government partner retains control to set the fare rates and service levels, which are important from a public policy perspective.

The global record with transport PPPs is decidedly mixed

⁵ World Bank. (2015) *World Bank Group Support to Public Private Partnerships*. <https://openknowledge.worldbank.org/bitstream/handle/10986/22908/9781464806308.pdf?sequence=1&isAllowed=y>

⁶ Blanc-Brude, Goldsmith, H. and T. Vävilä, A Comparison of Construction Contract Prices for Traditionally Procured Roads and Public-Private Partnerships, *Review of Industrial Organization* 35, 1-2 (2009): 9-40.

⁷ UNDP (2012). “Bogota, Colombia bus rapid transit project: Transmilenos”. http://www.es-pau.fr/ppp/documents/featured_projects/colombia_bogota.pdf

CASE STUDY 3: TRANSMILENIO BRT, BOGOTA

In 2000, Bogota opened its TransMilenio BRT system. This project changed the global paradigm regarding BRT, by demonstrating how bus based rapid transit systems could provide low cost, efficient, popular transit service. At \$240 million, or \$5.9 million per km for the 41-km first phase of the system, TransMilenio was far cheaper than a comparable metro system that was being considered at the time. Bogota's BRT also includes passing lanes at each station, express services and boldly branded red buses and station designs—innovations that altered perceptions about the benefits of BRT. The Bogota BRT is structured as an innovative PPP. The planning and investment in the physical infrastructure for the stations and dedicated bus lanes is carried out and funded by public sector agencies and planning authorities. Private concessionaires, who are selected through competitive tenders and overseen by the public authority, operate the four main trunk lines and feeder bus services. The system has high enough ridership that operating costs are fully covered through fare revenues. The fares collected by the private operators are deposited in a trust fund daily, and then distributed to each trunk line and feeder service operator based on a formula that includes vehicle kilometers traveled and ridership volumes. A key success of the TransMilenio BRT is that it has dramatically improved travel times, the experience for riders, and delivered broad urban benefits such as improved personal safety at stations, fewer traffic accidents, and lower air pollution. Thus the key success for the TransMilenio BRT is that it is both a transit success and contributes to key city building objectives (Source: UNDP 2012)



TransMilenio station in Wvenida de las Américas, Bogotá. Photograph by Felipe Restrepo Acosta.

Potential costs of PPPs

This mixed performance highlights that alongside potential benefits, PPPs also have potential costs.

- PPPs are not a cheap way of delivering infrastructure. Private sector investors lend money at interest rates that are far higher than what can be accessed by government borrowing in many countries, adding millions of dollars in additional financing costs to the project.
- PPPs tend to have high transaction costs in order to structure deals and monitor performance.
- Many types of transport infrastructure such as public transit and non-tolled roads do not have user fees to cover the full cost of repaying private investment in the project. In such instances, PPPs still require public subsidies paid to the private investors to fund the capital and operating costs of the project over the life of the contract and do little to lessen the financial burden on government.

The most definitive study on PPP costs conducted by the European Investment Bank shows that **PPPs have up front capital costs that are on average 24% higher than their directly procured counterparts**. This is due to higher private financing costs and premiums that the PPP concessionaire charges for assuming project risks.

- It is important to note that though PPPs save government spending on initial lump-sum investments in transport infrastructure that can be substantial, they do not substantially affect a government's budget over time as these projects must be paid for by annual government payments or in the form of relinquishing revenues from user fees.
- Innovations brought forward through the PPP process tend to focus on small scale ingenuities that speed up construction, lower the cost or improve the financial prospects of the project for the concessionaire, rather than major revolutionary innovations in service concepts that improve the overall utility of the infrastructure for users.⁸
- Contract inflexibility has been a significant issue as well, and an inordinate number of projects have faced renegotiations. A landmark study by Gausch in 2007 found that in Latin America **69% of all transport PPPs were renegotiated**. The renegotiation typically took place within the first three years of the contract, at the instigation and to the benefit of the private sector partner and to the financial detriment of government and facility users.⁹

⁸ Himmel, M. and Siemiatycki, M. (2017). Public-Private Partnerships as Drivers of Innovation. *Environment and Planning C*. 35(5), 746-764.

⁹ See: Guasch, J.L. (2007). Negotiating and Renegotiating Infrastructure PPPs and Concessions. <https://www.imf.org/external/np/seminars/eng/2007/ppp/pdf/jlg.pdf>

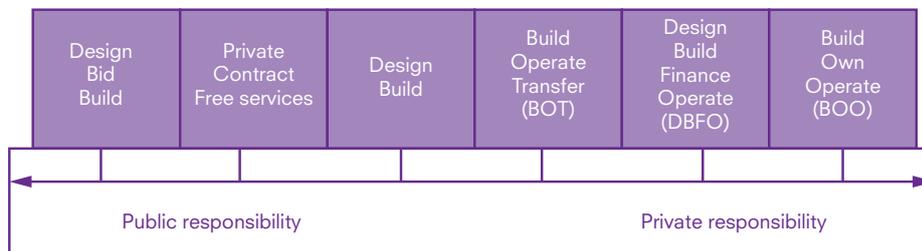
- Bankruptcies have also been widespread in transport PPPs. This includes the Cross City Tunnel in Sidney, Australia and other motorways in the country, and a series of new tolled ring roads surrounding Madrid where a suitable business case for the projects was never established. Similarly, transit PPPs such as the Kuala Lumpur Light Rail Line and the Los Vegas Monorail have experienced financial difficulties and entered into bankruptcy due to low passenger volumes and revenues.

What projects are better suited to PPP delivery?

Importantly, as illustrated in Figure 1, PPPs are just one model amongst a variety of options for delivering large transportation infrastructure. PPPs are best suited for large projects that cost at least \$50 million, since PPPs have high deal structuring costs that make them too costly to use for smaller projects. They are optimal for freestanding infrastructure like a new transit line or highway where responsibility and risk for the project can be very clearly allocated to the private sector partner. PPPs are also best suited for highly complex infrastructure where significant public benefit can be derived from private sector led risk management and innovation. However, PPPs are not suitable for all projects. In particular, they do not tend to be ideal for extensions of existing transit lines or highways that are deeply integrated into a transportation network. PPPs also tend to deliver limited value when the project is fairly simple and has minimal delivery risk.

PPPs are best suited for large projects that cost at least \$50 million and are also best suited for highly complex infrastructure where significant public benefit can be derived from private sector led risk management and innovation

Figure 1: Typology of Public-Private Partnerships



Source: Siemiatycki, 2006

Institutions to Support PPPs

Enabling legislation for PPPs is one aspect that needs to be in place. However, there also need to be a set of supporting institutions within the country to ensure that PPPs can be carried out effectively. A common approach is the formation of a central PPP unit that manages all stages of the project cycle. Where these units are housed varies from country to country, but is usually linked to a national Ministry, like the Ministry of Finance. Functions of such a unit are multifold and have been summarised by Chaponda (2013)¹⁰ as follows:

- Managing and assessing risks for all PPPs considered by various institutions of government;

¹⁰ Chaponda, T. (2013) *Key Institutional Decisions in Public Private Partnerships*. London: International Growth Centre.

- Setting up and promoting government as an adequate investment partner;
- Lowering the political and regulatory risks associated with PPPs;
- Overseeing the contractual partner to ensure they are delivering as per their contractual obligations.

Further to the laws and institutions, sound regulatory frameworks, as well as transparent and efficient accounting and reporting mechanisms are required.

A key challenge for PPP units is to ensure that they remain evidence-based organizations and do not come to see their main role as promoters of PPP projects regardless of their merits. This has been achieved by structuring PPP units with a narrow mandate for administering PPP contracting and procurement processes, while infrastructure policy evaluation and project approvals is carried out by another branch of government.¹¹ In recent years, countries such as the United Kingdom, Australia and Canada have moved away from having national PPP units and replaced them with broad based independent infrastructure agencies such as the United Kingdom National Infrastructure Commission and the Major Projects Authority, Infrastructure Australia, and the Canadian Infrastructure Bank. These organizations have a mandate to plan and deliver infrastructure using all procurement models, not just PPPs.

A key challenge for PPP units is to ensure that they remain evidence-based organizations and do not come to see their main role as promoters of PPP projects regardless of their merits



Incomplete overpass in Pachuca, Mexico. Photograph by Alejandro Linares Garcia.

¹¹ Vining, A. and Boardman, A. (2008). Public-Private Partnerships: Eight Rules for Government. *Public Works Management & Policy*. 13(2), 149-161.

PPPs have up front capital costs that are on average 24% higher than their directly procured counterparts, but the premium is offset by government avoiding similarly sized cost overruns on traditionally procured projects.

Key messages

In sum, in spite of the growing popularity of PPPs worldwide, they are by no means a panacea. The outcomes of PPPs globally have varied widely, depending on the effectiveness of the procurement model followed as well as the structure and execution of the PPP. Against this backdrop, the paper will identify 6 key lessons for policymakers to achieve effective procurement and PPPs in the transport sector.

1. Pick the right project

The first step in procuring large transport infrastructure is developing strategies to use evidence effectively to select the most societally desirable projects. Importantly, evidence based planning does not aim to remove politicians from decision-making, as politicians are key in expressing the interests of their constituents and ensuring accountability. Rather, in the ideal model of evidence based infrastructure planning and delivery, politicians establish the overall priorities and goals that transportation projects should achieve. Independent technical assessments are then conducted to assess the infrastructure priorities and project delivery options to achieve the objectives set out by the politicians. Once the technical assessments are completed, they should then be made public, and used to inform political deliberations and approvals.

Evidence based planning does not aim to remove politicians from decision-making – as politicians are key in expressing the interests of their constituents and ensuring accountability

Institutionally, governments have set up independent agencies such as Infrastructure Australia and the United Kingdom National Infrastructure Commission to provide impartial, expert advice on infrastructure priorities and decisions. These institutions also serve as national centres of excellence to develop robust project evaluation tools, train government officials in effective project delivery techniques, and serve as repositories for lessons learned.

Based on international experience, effective evidence based assessments of transportation mega-projects include three components:

- 1 Benefit cost analysis study:** a study that evaluates the benefits and costs of delivering a proposed project. These studies typically evaluate projects based on multiple accounts including economic objectives such as cost, commercial viability and risk, environmental impacts, social equity and serving high need communities, fit with existing public policy, and local neighbourhood considerations. Using a multiple accounts framework balances the financial imperatives of transportation projects alongside the significant social and environmental impacts that can be experienced from such investments.¹²

¹² Flyvbjerg, B. (2017). *Oxford Handbook on Mega-Project Management*. Oxford: Oxford University Press.

- 2 Affordability analysis:** a study is necessary to assess the affordability of the project for the sponsoring government. In other words, regardless of the merits of the project, can the government sponsor afford any additional borrowing costs if the project is not funded entirely through user fee revenues and thus requires a subsidy? Such affordability assessments should include a sensitivity analysis to account for the possibility that construction costs escalate and revenues do not meet forecasted levels.¹³
- 3 Procurement option analysis:** in countries such as Canada and the United Kingdom, procurement option analysis known as a value for money study is conducted to assess the optimal procurement model to deliver prioritized projects. Value for money studies commonly compare the construction, transaction and risk related costs associated with delivering a project through a PPP and a public sector comparator. Such analysis should also include an assessment of the impact of the procurement model on user fee rates and long-term policy flexibility.¹⁴

Following project approval, the best practice internationally is for both PPP and conventionally delivered projects to be procured by government departments, agencies or crown corporations that are free from politicization of procurement. The independence of the state team procuring transport infrastructure is important to avoid the politicization of contractor selection and project management, which increases political risk and the threat of corruption. Many jurisdictions such as Ontario, Quebec and British Columbia in Canada have set up independent government agencies to manage the procurement and delivery of transport infrastructure at a distance from government and avoid political interference.

2. Transparency and accountability

Transparency is essential to effective procurement regardless of the model followed, as it enables broad scrutiny and accountability of the deals being signed and projects delivered. In order to achieve sufficient transparency, all bid information and documents, project costs, government technical studies and final contracts should be made available during the procurement process. Many government departments such as Infrastructure Ontario, Partnerships British Columbia, the New York Department of Public Works and many others now post extensive project documentation online. Additionally, to ensure that transparency supports accountable decision-making, the procurement agency should identify the individuals and organizations answerable for each decision; debate and approve major infrastructure in public sessions; and provide the community with mechanisms to provide input into project planning and seek redress if they are negatively impacted by a decision.

Transparency is essential to effective procurement regardless of the model followed, as it enables broad scrutiny and accountability of the deals being signed and projects delivered

¹³ European Investment Bank. (2017). 2017 CEF Transport Blending Call. Retrieved October 11, 2018, from: https://ec.europa.eu/inea/sites/inea/files/faqs_blending_batch_1_20170505.pdf

¹⁴ Siemiatycki, M. and Farooqi, N. (2012). Infrastructure Public-Private Partnerships: Delivering Value for Money? *Journal of the American Planning Association*, 78:3, 283-299.

A commonly cited barrier to transparency during transport project procurement is the need to protect data confidentiality to preserve commercially sensitive information and protect the negotiating position of the government partner. Procurement processes do produce commercially sensitive information regarding innovative technologies and design, pricing strategies and government negotiating positions. It is argued that the release of this information could increase the cost of doing business with government and in the long-term raise project costs. However, in some cases governments tend to over use claims of commercial sensitivity to avoid releasing information on projects that would be embarrassing or raise probity issues.¹⁵ In response, Table 1 provides an overview of the limited information that can specifically be identified as commercially sensitive, and which information should be released.

Table 1: Defining commercially sensitive information

Information requiring confidentiality	Information not requiring confidentiality
Nontrivial information not yet in the public domain and known only to a limited number of parties	Performance criteria and financial guarantees
Currently sensitive information	Indemnities
Information which could have a commercial value to competitors, including internal price structures, trades secrets, and business strategies	The price of an individual product or group of goods or services
Tender reports, where they contain confidential information	Rebate, and liquidated damages clauses
	Clauses that describe how intellectual property rights will be handled
	Payment arrangements

Source: Australian National Audit Office, 2001

3. Data driven procurement

Procurement processes create extensive amounts of data on the contractors, their bidding strategies, firm and government agency performance, and the outcomes of various infrastructure projects. Governments should develop procurement information systems to learn about their procurement outcomes on past projects and use that information to drive better decision making over time, as is done in Singapore, Hong Kong, and by the Ministry of Transportation in Ontario (See case study 4).

Another area where data driven procurement is gaining interest is to identify signs of bid rigging in infrastructure procurements. Transport contracts have been identified as a major area of corruption and bid rigging. Endemic bid rigging was uncovered in Montreal city paving contracts in the late 2000s, and systemic bribes and corruption were identified in projects carried out

Governments should develop procurement information systems to learn about their procurement outcomes on past projects and use that information to drive better decision making over time

¹⁵ Siemiatycki, M. (2007). What's the Secret? The Application of Confidentiality in the Planning of Infrastructure Using Private-Public Partnerships. *Journal of the American Planning Association*.73:4, 388-403.

by the Brazilian contractor Odebrecht. According to some estimates, cartels overcharging in the infrastructure sector can increase procurement costs by up to 25% or more.¹⁶ In response, government agencies such as the European Competition and Markets Authority have developed a free tool available to procurement managers that uses algorithms to spot the varied patterns and signs of bid rigging.¹⁷

CASE STUDY 4: PROCUREMENT INFORMATION SYSTEMS IN SINGAPORE

The data driven approach to contractor performance monitoring and procurement is well established in Singapore. The Construction Quality Assessment System (CONQUAS) has been in place since 1989, and provides independent evaluations using inspections of firm performance on government construction projects. A user friendly website is available to publicly report and display information on firm performance of structural, architectural and mechanical and electrical works.

Significantly, the collection of data on its own does not lead to improved procurement performance. Rather, systems are required to integrate performance-benchmarking information into future bids and reward companies that achieve high quality performance. In Singapore, firms that have high performance scores are provided with a small number of bonus points on the scoring of their future bids as an incentive to perform. The result is that the quality of government project delivery has improved significantly over the 30 years that the CONQUAS quality assurance system has been in place. (Source: CONQUAS, 2018)

4. Private finance comes at a cost

Private finance for infrastructure PPPs is not free; it comes with high borrowing costs and complex contractual arrangements. The typical PPP project involves a highly leveraged financial structure, with 90% debt and 10% equity. The overall **private financing costs on an infrastructure PPP when debt and equity rates are blended is often 2-3 percentage points higher** than government borrowing, which can add tens of millions of dollars to large projects financed privately over a 35-year period. Organizing private finance is also costly as it requires significant transaction costs for financial advisors, drafting legal contracts and debt arrangers. And some private equity investors in PPPs, in particular, have often sought to quickly sell their stakes in infrastructure projects, generating significant returns that can be costly and embarrassing to government. According to evidence presented at a 2018 United Kingdom parliamentary committee hearing on PPPs, equity investors achieved average returns of over

The overall private financing costs on an infrastructure PPP when debt and equity rates are blended is often 2-3 percentage points higher than government borrowing

¹⁶ World Bank. *Curbing Fraud, Corruption and Collusion in the Road Sector*. http://siteresources.worldbank.org/INTDOII/Resources/Roads_Paper_Final.pdf

¹⁷ For further information on bid rigging detection software, see: <https://www.cips.org/en/supply-management/news/2017/november/cma-provide-tool-to-spot-bid-rigging/>; <https://www.gov.uk/government/news/cma-launches-digital-tool-to-fight-bid-rigging>

25%, particularly when equity is sold after the completion of the construction period. Shareholders on the M25 road PPP, for instance, earned an estimated 31% return on their investment when selling their stake in the project after 8 years. Additionally, PPP owners in the United Kingdom have used offshore fund structures in order to pay little tax on their investments.¹⁸ In recent years, governments globally have placed caps on short-term equity returns and developed contractual mechanisms to share in profits achieved when equity investors make returns over a certain cost threshold.

While privately financing infrastructure comes at a significant cost premium, it is meant to serve a purpose in driving value for money by spurring cost saving innovations, encouraging careful private sector scrutiny of project viability, incentivizing lifecycle asset management, and providing a financial backstop for risk transfer arrangements. To this end, governments should seek to **optimize rather than maximize** the inclusion of private capital in PPP arrangements, as this can lower the total long-term cost of PPP projects while retaining the incentive that private financing provides to the concession team. This can be achieved by strategically blending some private sector financing alongside lower cost government borrowing as is becoming more common. In Ontario, for instance, upwards of one third of the total capital cost of a project is initially privately financed, but the government makes payments as key milestones are made during the risky construction period. By the time construction is complete and during the lower risk operation period of the project less than 20% of the project is financed with high cost private capital.

5. PPP risk allocation

The **value for money in PPPs is largely predicated on the transferring of key project risks from government to the private sector.** The three major risks on large infrastructure projects are construction risks leading to cost overruns and delays; availability risk that the project is out of service and therefore not delivering public benefit or collecting revenue; and the risk of facility demand and revenues falling below predicted levels. The common strategy for assigning risks in PPPs is to **allocate risk to the partner best able to manage it.**

The common strategy for assigning risks in PPPs is to allocate risk to the partner best able to manage it

In practice, many governments have sought to allocate as much construction, availability and demand risk as possible to the private sector partner, believing that this would protect government from costly and embarrassing procurement challenges that have plagued transport mega-projects worldwide. However, this has been a mistake for three key reasons. First, transferring risk to the private sector is not free, and concessionaires charge significant amounts to assume major project risk. Second, the misallocation of risk to the private sector can result in unstable concessions that require renegotiation when major risk events occur and in some cases firms enter bankruptcies. The first generation of PPP road concessions in the mid 1990s in Mexico, Argentina and Colombia,¹⁹ and more recently in Spain and Australia have been particularly prone to contract

¹⁸ House of Commons Committee of Public Accounts. (2018). Private Finance Initiatives. <https://publications.parliament.uk/pa/cm201719/cmselect/cmpubacc/894/894.pdf>

¹⁹ Engles, E., Fischer, R. Galetovic, A., Schargrotsky, E. and Montero, J-P. (2003). Privatizing Highways in Latin America: Fixing What Went Wrong. *Economía*, 4(1) 129-164.

renegotiations that benefit the concessionaire at the expense of government and facility users (See case study 5).

CASE STUDY 5: CHALLENGES WITH FIRST GENERATION PPP HIGHWAY CONCESSIONS IN COLOMBIA

In the mid 1990s, Colombia undertook its first generation of PPP highway concessions, with 13 projects valued at US\$1.08 billion. However, the program was plagued with challenges from the beginning, which highlight issues stemming from an impetus to move quickly and a lack of experience with PPP concessions at the time. The bidding period for projects was very short and there was little in the way of marketing to attract international bidders. As a result, of the 13 highway projects, only 7 were awarded through a competitive tendering process; the remaining 6 were assigned directly to concessionaires after no firms bid on the projects. Feasibility and traffic volume studies on the projects were unfinished prior to the bidding process. This led to delays with permitting and land expropriations. The government agency did not assess the financial health of the winning bidders during the competitive tendering process. Following contract award, a number of the winning contractors were not able to obtain private financing, which caused further delays. And many of the contracts were incomplete and did not include dispute resolution protocols or owner step in rights for the lenders in case the contractor failed to meet their obligations. Ultimately, the first generation of Colombian road PPPs experienced significant cost overruns, traffic volume shortfalls, extensive contract renegotiations, and large state payouts to the concessionaires to fulfill government contract guarantees. (Source: Engle et al., 2003).

Third, while the transferring of construction risk to the private sector is standard in PPPs and can be particularly effective, **transferring availability and demand risk in particular has resulted in contracts that are often inflexible and challenge the public interest.** Transferring availability risk requires careful government monitoring to ensure that regular maintenance is being carried out as stipulated. And PPP project operators with long-term concessions have often charged substantial premiums where governments have chosen to renovate or upgrade facilities outside of the contract terms. **It is not uncommon for PPP facility operators to charge twice or three times as much for government requested facility upgrades** as could be negotiated through a tender on the open market. And demand risk is highly unpredictable, and private sector partners will often require expensive government guarantees, high user fees, or unpopular non-competition agreements in order to assume demand risk. PPP projects such as the Orly Airport Express in Paris, the Kuala Lumpur rapid transit system, the Croydon Tramlink and the State Route 91 Express Toll Lanes have all faced challenges with demand risk transferred to the private sector and were ultimately purchased by government at considerable expense

(See case study 6).²⁰ As a World Bank study on transit PPPs bluntly reports, “allocating all demand risk to private operators has a poor track record.”²¹

More recent PPP agreements have sought to design contract terms that provide flexibility and risk sharing. Demand risk sharing between the public and private sectors has become more common, for instance, by varying the duration of the concession period depending on demand thresholds being met. And governments are developing contract clauses that permit certain types of facility renovations and upgrades to be undertaken through competitive tendering.

CASE STUDY 6: STATE ROUTE 91 EXPRESS TOLL LANES, ORANGE COUNTY CALIFORNIA

In 1990, the government transportation agency in Orange County, California accepted an unsolicited PPP proposal from a company to design, build, finance, operate and maintain 10 miles of new express toll lanes in the median of the existing State Route 91 Highway. The contractor would recoup all of its \$126 million investment in construction costs and ongoing operating expenditures from toll revenues without a government guarantee. This effectively transferred the demand risk to the private sector, and enabled the government to deliver high quality infrastructure without taking on the financial expense directly.

When the facility opened in 1995, travel times in the corridor were reduced on both the free general-purpose highway lanes and on the new toll lanes. However, soon after opening, concerns about road safety and rising congestion in the transportation corridor led the government agency to announced plans to further expand the SR91 highway. In response, the private PPP contractor invoked a confidential non-competition clause in the contract, which prevented the government agency from expanding the highway in order to protect the traffic volumes and financial interests of the concessionaire. Subsequent negotiations and legal challenges by the state failed to nullify the non-competition clause in the contract. Ultimately, as congestion on the highway worsened over time, in 2003 the state agency purchased the express toll lanes from the contractor for \$207 million. While this eliminated the non-competition clause that was a barrier to facility improvements, it also created a major expense for a government that had sought to use a PPP to transfer the cost of delivering infrastructure to the private sector (Siemiatycki, 2011).

²⁰ Siemiatycki, M. and Friedman, J. (2012). The Trade-offs of Transferring Traffic Demand Risk on Transit Public-Private Partnerships. *Public Works Management and Policy*, 17:2, 283-302.; Siemiatycki, M. (2010). Delivering Transportation Infrastructure Through Public-Private Partnerships: Planning Concerns. *Journal of the American Planning Association* 76: 43 – 58.

²¹ Menzies, I., & Mandri-Perrott, C. (2010). Private sector participation in urban rail. *Grid Lines*, 54, 1-4.

6. Dispute Resolution

Despite the intent of PPPs as long-term relationships between the public and private sectors, PPP deals in practice are particularly unpredictable and prone to conflict between the partners. As noted above, contract renegotiations are common, and bankruptcies do occur. Moreover, given the stakes associated with projects that can cost billions of dollars, lawsuits are common between the public and private sector partners, and between the various private sector partners that form the concession team. In this context, it is important that government capacity is developed to effectively negotiate with private partners from the start, and that cheap, quick, independent dispute resolution protocols are put in place to avoid lengthy legal proceedings that can delay construction or disrupt facility operation. In the case of the \$5.3 billion Eglinton Crosstown light rail project in Toronto, for instance, legal wrangling between the government project sponsor and the contractor over who is to blame for costly construction delays moved through the dispute resolution process and into the preliminary stages of a court challenge; but because of the dispute resolution protocol construction on the project continued while the legal matter was resolved. More broadly, when multinational firms and state owned enterprises are involved in financing and delivering international infrastructure projects outside their home jurisdiction, contractual disputes can become embroiled in international politics and diplomacy that require tough negotiations to resolve (See case study 7).

It is important that cheap, quick, independent dispute resolution protocols are put in place to avoid lengthy legal proceedings that can delay construction or disrupt facility operation

CASE STUDY 7: BUMPY TRIP TO A NEW AIRPORT IN QUITO, ECUADOR

In the 2005, the government of Ecuador entered into a PPP arrangement with an international consortium made up of major Canadian, Brazilian and American firms to design build, finance, operate and maintain a new world class international airport in Quito. The \$660 million project was to be privately financed through a mix of debt and equity, which would be repaid through airport tariffs. The new Quito Airport PPP was awarded the 2006 Latin American Transport Deal of the Year by Project Finance Magazine.

In 2009 with the construction two thirds complete, the Constitutional Court of Ecuador ruled that the airport tariffs that were central to repaying the private financing of the project were in fact state property. This set off a chain of events where the lenders stopped providing financing to the project, and construction ground to a halt. In what became one of the most complex commercial disputes in Latin America, it took 18 months and more than 25 rounds of tense negotiations to reach a settlement between the parties to renegotiate the contract and enabled private financing to flow to the project and construction of the airport to be completed. Despite the turbulent start, since opening the airport has been a success, and has received awards as a leading airport in Latin America (Source: White and Case, 2011)

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Cover photo: Quito's Trolleybus BRT system. Photograph by Mario Roberto Duran Ortiz.