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Introduction

The links between infrastructure and poverty alleviation, equality, growth, and specific development outcomes such as job creation, market access, health, and education are well established; infrastructure's impacts are felt through multiple channels.[1] It enlarges markets (for labor, goods, and ideas), increasing output and productivity.[2] Poor infrastructure impedes a nation's economic growth and international competitiveness.[3] Insufficient infrastructure also represents a major cause of loss of quality of life as well as illness and death.[4] This raises infrastructure services from a good investment to a moral and economic imperative. In order to stimulate growth

[1] Straub, S., Infrastructure and Growth in Developing Countries: Recent Advances and Research Challenges, World Bank Policy Research Working Paper No. 4460 (2008); Calderón, C. & L. Servén, Infrastructure and economic development in sub-Saharan Africa, *Journal of African Economies* 19 AERC Supplement 1 (2010a), 13–87; Calderón, C. & L. Servén, Infrastructure in Latin America, Policy Research Working Paper 5317, World Bank (2010b); Calderón, C., E. Moral-Benito, & L. Servén, Is Infrastructure Capital Productive? A Dynamic Heterogeneous Approach, Policy Research Working Paper 5682, World Bank (2011); Agénor, P-R. & B. Moreno-Dodson, Public Infrastructure and Growth: New Channels and Policy Implications, World Bank Policy Research Working Paper 4064 (2006); Estache, A. & G. Garsous, The impact of infrastructure on growth in developing countries, *Economics Notes* 1 (2012); Schwartz, J., L. A. Andres, & G. Dragoiu, Crisis in Latin America Infrastructure Investment, Employment and the Expectations of Stimulus, World Bank Policy Research Working Paper No. 5009 (2009).

[2] Prud'homme, R., Infrastructure and Development, paper prepared for the ABCDE [Annual Bank Conference on Development Economics], Washington, D.C. (May 3–5, 2004); extracted from www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/05/13/000265513_20040513160037/Original/28975.doc.

[3] World Bank, *Infrastructure at the Crossroads: Lessons Learned from 20 Years of World Bank Experience* (2006); World Bank, *Infrastructure and the World Bank: A Progress Report* (2005).

[4] Willoughby, C., *Infrastructure and the Millennium Development Goals* (2004). For further discussion of the importance of infrastructure to economic growth, social cohesion, quality of life, education, health, social development, environmental management, mobilization of private investment, and job creation, please see www.worldbank.org.

and reduce poverty, it is essential to improve the supply, quality, and affordability of infrastructure services. The unmet demands are huge, and investments have not matched demand.[5]

Infrastructure projects have high social rates of return; the growth generated by infrastructure investment is generally pro-poor, with the income levels of the poor experiencing a proportionately greater increase than that of overall income.[6] The public sector provides financing for the vast majority of infrastructure services. However, many governments that would like to increase their infrastructure investment have limited fiscal space (the credit capacity/right to borrow money), with infrastructure facing stiff competition from alternative uses of public funds. The government analyzes, chooses, and implements policies intended to improve infrastructure delivery, reduce waste and corruption, and develop the information and data to manage infrastructure effectively and efficiently. This cannot be done through a one-size-fits-all solution, and the government will need to choose from a range of approaches aligned with its goals and objectives.

Ultimately, the cost of infrastructure has to be borne by its users or by taxpayers, current or future (aside from limited levels of foreign aid). Investments of public infrastructure firms have traditionally been financed from the public budget (through taxing or borrowing), possibly with a contribution from the users of services (consumers). Funding by future taxpayers and/or consumers occurs when the government or utility borrows money, to be repaid from future revenue.

Public–private partnerships (PPP) represent an approach to procuring infrastructure services that is radically different from traditional public procurement. It moves beyond the client–supplier relationship when government hires private companies to supply assets or a service. PPP is a partnership between public and private to achieve a solution, to deliver an infrastructure service over the long term. It combines the strength of the public sector's mandate to deliver services and its role as regulator and coordinator of public functions with the private sector's focus on profitability and commercial efficiency.

PPP can provide a number of benefits:[7]

- The proportion of large-scale infrastructure projects delivered to time and budget is increased, due to alignment of incentives and access to latest construction and operation methodologies and technologies.

[5] World Bank, *Sustainable Infrastructure Action Plan FY 09-11* (2008).

[6] Calderón, C. & L. Servén, The Effects of Infrastructure Development on Growth and Income Distribution, Policy Research Working Paper (2004).

[7] World Bank, *Public–Private Partnerships: Reference Guide Version 2.0*, documents.worldbank.org/curated/en/2014/01/20182310/public-private-partnerships-reference-guide-version-20 (2014); Andrés, L., J. Schwartz, & J. L. Guasch, *Uncovering the Drivers of Utility*

- Infrastructure shifts from a focus on inputs (construction) to a service culture, increasing innovation and competition with design better focused on minimizing the lifecycle cost and managing lifecycle risks, since the builder is also responsible for operation and maintenance.
- The service dynamic creates a positive and significant impact on coverage, quality of services, billing and collection, operational efficiency, and labor productivity.
- Project evaluation and due diligence are enhanced, using balance of interests of different stakeholders (e.g., government, investor, lender) to achieve more robust project assessment and a prioritization of value for money.
- Competition is used to improve innovation and quality.

Box 1.1. Definitions

PPP is used here in its most inclusive form to mean any contractual or legal relationship between public and private entities aimed at improving and/or expanding infrastructure services. Clearly, the more extensive the private involvement, the more supportive the investment climate needs to be. The term *government* will be used to mean the level of government responsible for the reform processes, whether it be the federal, state, or municipal government. The two counterparties to the main project contract will be referred to as the *contracting authority* on the public side and the *project company* on the private side. PPP can be implemented as a series of ad hoc projects or as a program of projects coordinated and enabled centrally – *PPP programs*.

- New opportunities are provided for local capital markets and in particular institutional investors, such as pension funds, which can match their long-term liabilities with the long-term revenue streams of PPP projects.

Performance, Lessons from Latin America and the Caribbean on the Role of the Private Sector, Regulation, and Governance in the Power, Water, and Telecommunication Sectors (2013); Gassner, K., A. Popov, & N. Pushak, *An Empirical Assessment of Private Sector Participation in Electricity and Water Distribution in Developing and Transition Countries* (2007); Gassner, K., A. Popov, & N. Pushak, Does Private Sector Participation Improve Performance in Electricity and Water Distribution? Trend and Policy Option #6 (2009); Marin, P., Public–Private Partnerships for Urban Water Utilities – a Review of Experiences in Developing Countries. Trends and Policy Option No 6, World Bank, Public–Private Infrastructure Advisory Facility (PPIAF) (2009).

- Traditional public procurement improves, as the public sector learns lessons from the PPP program.
- A focus on value for money helps governments choose the best projects to implement through PPP.
- Access to private capital is provided to increase investment.
- Demonstration effect for local businesses is achieved, with lessons learned from efficient PPP examples.
- Transition toward greater privatized services begins, in particular in the power, health, and education sectors.

In the world of PPP projects, there are numerous options, structures, solutions, and strategies. Risk allocation – balanced in line with rewards – between the public and private partners is key to the success of these partnerships.[8]

Governments need to focus more than ever on managing lenders and on creating the right framework for PPP, including the legal, regulatory, institutional, and financial interventions that a government can use to encourage:

- Selecting good, viable projects
- Carefully preparing projects to address gaps and risks, respond to market demands, and give government access to best pricing, timing, and conditions
- Attracting the best available financing solutions (e.g., government support of a type and amount that is value for money for the government)
- Locating resources for implementation and oversight, creating feedback loops to learn from projects, developing national good practice, and improving capacity for the national program

Box 1.2. Sample PPP Projects

A few simple examples of PPP projects might include the following:

- A power plant built, financed, and operated by the private sector delivers power to a public utility, which commits in advance by contract to purchase the power generated at a specified price over the long term. The private sector uses the purchase promise of the utility to secure lending and investment and is incentivized to build a quality facility that will meet performance requirements over the long term.

[8] Delmon, J. & E. Juan, *Euromoney Infrastructure Finance Book* (2008), chapter 10.

- The private sector promises to expand the airport and improve services in exchange for the right to operate the airport over a period of time. The private company promises to share a specified percentage of the revenues of the airport with the government.
- The private sector builds, finances, and operates a bus terminal and installs commercial facilities (e.g., shops, offices) around the terminal. The bus terminal must meet performance requirements; otherwise, the private sector must pay penalties or may lose the project. The private sector receives revenues from buses using the terminal, tenants of the shops, tenants of offices, and other commercial sources. If revenues seem promising, the private sector may share revenues.

One of the challenges for governments wanting to implement a conducive PPP framework is the variety of models and frameworks put forward by different countries, advisers, and commentators. This book suggests that development of a conducive framework for PPP involves a dynamic, iterative process supported by different functions and actors within the government, the private sector, and the communities in question. Instead of proposing a single model, this book discusses the different elements that together make up an effective PPP framework: the legal framework (how laws and regulatory structures can be used to encourage PPP), the institutional framework (the people involved, the decision-making power they have, and the functions they perform), the project procurement process, government involvement in each phase thereof, the use of government funding to support projects, and the mobilization of long-term local currency financing for PPP projects.

Key Messages for Policy Makers

- *Be patient*. PPP is not a quick fix; it takes time to develop and implement properly. Generally, more effort spent in advance of procurement to prepare the project properly will save much more time and frustration later. Think through contingencies in advance, and make sure you are happy with the project structure and specification before going to the market.
- *Choose well*. A good project should be financially, economically, and politically viable. Pilot projects should not be too big or too small.
- *Prepare well*. PPP requires upfront investment of staff and money to develop projects well, in particular to pay for expensive external

advisers. Project development costs the government 3 percent or more of project construction cost. The benefit of this upfront investment is obtained over time, since PPP provides for management and funding for the whole life of the assets and therefore addresses project risks early.

- *Prepare the government to play its part from project development to expiry*. Even where a comprehensive PPP is envisaged, the government will play an essential role in monitoring and regulating the project and the sector.
- *Be ready for challenges*. In any long-term relationship, change happens. PPP is, above all, a partnership, and it needs to be designed with challenges, changes, and resolution in mind. Problems need to be elevated to appropriate levels of management before they become disputes or worse.

Throughout the text, specific, candid advice is provided for policy makers. This advice is summary and generic, and should be treated accordingly.

For a more extensive discussion of the issues set out in this book, see Jeffrey Delmon, *Private Sector Investment in Infrastructure: Project Finance, PPP Projects and PPP Programmes*, 3rd edition (2016). Reference should also be made to www.worldbank.org/pppirc for further discussion of legal and contractual issues in PPP.

This book is organized into ten chapters:

Chapter 1	Introduction to the fundamentals of PPP, discussing the nature of PPP and the investment climate needed to attract PPP.
Chapter 2	PPP frameworks – including legal, institutional, and financial – needed to develop PPP on a programmatic basis.
Chapter 3	Public support and how it can be used to enable and mobilize a PPP program.
Chapter 4	Procurement of PPP, project preparation, and implementation.
Chapter 5	Financing of PPP, the source of potential funding, how project financing (also known as limited recourse financing) works, and what governments can do to improve financing flows for PPP.
Chapter 6	Key issues associated with local currency financing, in particular, how government can help to mobilize local currency financing for PPP.
Chapter 7	Risks encountered in PPP projects and how those risks are allocated among the project parties through the different project contracts.

Chapter 8	The contractual structure of a PPP and the key issues to be addressed through the contractual structure.
Chapter 9	Different elements of project implementation, from financial close through to project expiry.
Chapter 10	PPP in different sectors, from transport, power, and water to education, health, and small projects.
Appendices	Summary of the key messages provided for policy makers, a glossary of key terms, and a list of key readings and websites on PPP for further reference.

1.1 Fundamentals of PPP

Infrastructure is primarily a public sector issue, with annual global public sector investment in infrastructure vastly exceeding that of the private sector. PPP is an arrangement for the private sector to deliver infrastructure services to the public or to assist the public sector in this task. It is:

- Normally established contractually, formalizing the relationship, scope, and output-based obligations
- Focused on delivery of services and performance
- Often long term
- Focused on risk sharing to ensure commitment, buy-in, sustainability, efficiency, and balance
- Established between at least one public and one private entity[9]

Even for the most public of service providers, private involvement forms an essential part of successful service delivery, whether through construction contracts, service agreements, delivery of goods, and/or joint ventures. PPP can help mobilize this private involvement more efficiently.

Figure 1.1 sets out a number of commonly used PPP terms.[10] A few of the key acronyms are defined in the following for reference.

Corporatization – involves a utility that is in public ownership being run in a manner similar to that of a private sector entity, using incentive mechanisms for staff and management similar to those used in the private sector.

[9] PPPs between public entities are often known as performance contracts and raise additional challenges, in particular difficulty in enforcing obligations.

[10] For a general discussion of PPP structures, and why current nomenclature is woefully inadequate, see Delmon, J., *Understanding Options for Private Participation in Infrastructure: Seeing the Forest for the Trees: PPP, PSP, BOT, DBFO, Concession, Lease …* (2010).

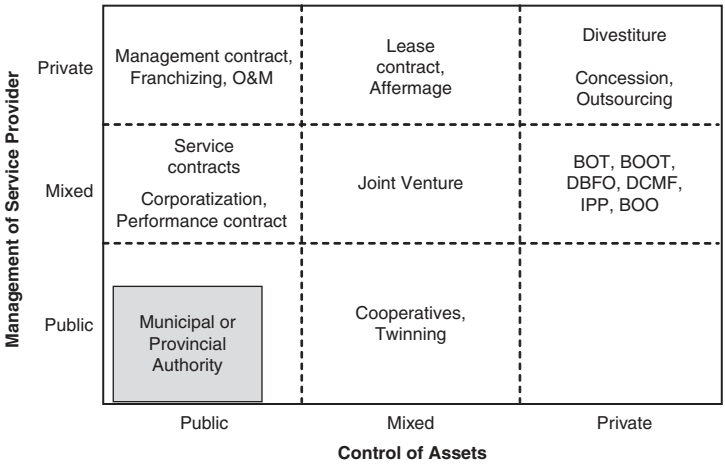

Figure 1.1. PPP structures.

For example, a corporatized utility may be structured as a limited liability company, with its share capital controlled by the public, while publishing the equivalent of an annual report containing a profit and loss statement, balance sheet, and cash flow data, giving a clear picture of the utility's finances and where any inefficiencies may be found (typical public utilities lack transparency in their accounts, making it difficult to isolate inefficiencies or properly incentivize management).

Service contracts, management contracts, operation and maintenance (O&M) contracts – are all structures whereby a private company provides services to a utility/contracting authority (for example, management services, improvement of billing and collection services, leak reduction, or marketing) with payments generally linked to performance.

Key Messages for Policy Makers

- *PPP is by nature flexible*. Look first at what you need, then design your approach based on those needs. Do not look first at what others have done, as your context may be very different. That said, a careful analysis of experiences in other jurisdictions is always useful.
- *Confirm project viability periodically to avoid losing focus*. First decide you want PPP on a rational, fundamentally sound basis, then keep reminding yourself why you chose PPP; periodically verify that the project is meeting those objectives.

- *Government must regulate and monitor PPP.* This must be an integral part of project design. PPP or not, the public sector is always the final authority and will be considered by the public to be ultimately responsible for the provision of public services. The public sector must be prepared to commit (time and budget) to the continual monitoring and evaluation of PPP projects.
- *Consider all stakeholders.* PPP will have a direct influence on some stakeholders (in particular, employees and management) and may raise political or philosophical concerns among many more. While absolute consensus will never be reached, the government needs to understand fundamental concerns and address them.

Franchizing, cooperatives, twinning – involve using an experienced operator's or utility's expertise and reputation through a local service provider's manpower and resources.[11]

Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), Design-Build-Finance-Operate (DBFO), Design-Construct-Manage-Finance (DCMF), Independent Power Producer (IPP), Build-Own-Operate (BOO) – are similar in nature, looking to the project company to build (or refurbish if you replace the "B" with an "R") and operate a facility and deliver services to a utility (for example, to a water services company), a service delivery entity (such as a health service trust), or the consumer (be it power distribution, a road, a hospital, or otherwise). The facility may or may not be transferred to the government after a defined period of time (as sometimes indicated by the letter "T" at the end of the abbreviation).

Lease contract, affermage, concession – these generally involve the project company delivering services directly to the consumer, and differ primarily in whether the project company is responsible for new asset investment (e.g., in an affermage,[12] generally it is not) and whether the project company owns the assets (e.g., in a concession, generally it does). Performance

[11] See Water Operators Partnerships – Africa, *An Action Program to Enhance the Performance of African Water and Sanitation Utilities* (2008).

[12] There is a degree of confusion in the use of the term *affermage*. Certain authors have suggested that affermage agreements do not involve any obligations to make capital investments (see, for example, Guislain, P. & M. Kerf, Concessions – the Way to Privatize Infrastructure Sector Monopolies, Viewpoint, Note No. 59, World Bank (1995); Hall, D. R., *Public Partnership and Private Control – Ownership, Control and Regulations in Water Concessions in Central Europe* (May 1997), www.psiru.org). In contrast, other authors have asserted that affermage agreements can include an obligation to make capital investments,

contracts are similar but with a public sector service provider. Enforcing obligations under a performance contract can be difficult, as can governance generally, as both parties are public and appropriate formal dispute resolution mechanisms may not exist.

The preceding definitions are for reference only; they mean different things to different people and are therefore inexact and often misleading as terms of reference.[13] Further, these examples should not be viewed as an exhaustive description of the universe of PPP. PPP is ultimately flexible, limited only by the creativity of those involved and their access to funding.

1.2 Categorizing PPPs

Another way to think about the different types of PPP is to focus on the functions performed by the private party. The following provides a categorization methodology for PPP, classifying the different design options for PPPs based on their most salient elements, those characteristics fundamental to the nature of PPPs, and therefore the character of the project in question.[14] Lack of an agreed-upon categorization methodology has created confusion and limited the ability to cross-fertilize (learning lessons from different regions and sectors who use different terminology), making it difficult to know, without in-depth analysis, whether the structures being used are similar or not.

There is no universal norm as to the most appropriate approach to PPP. That analysis needs to be made on a country-by-country, sector-by-sector, and project-by-project basis. The model is therefore not meant to be normative. Instead, it is meant to give a common basis for description across projects, sectors, countries, legal systems, and cultures.

The classification model (see Table 1.1) addresses five key parameters that may or may not be relevant to any given PPP project. These parameters identify the most fundamental characteristics of a PPP project:

1. *New or existing business*: taking over existing revenues, customers, assets, or employees represents a different risk profile than a new business.
2. *The nature of project company construction obligations*: implementing a significant construction program carries with it a host of

so long as the cost of the investment can be recovered during the lifetime of the agreement (see, for example, Third Party Access in the Water Industry, prepared for Tasman Asia Pacific, at www.ncc.gov.au).

[13] Ibid.

[14] Ibid.