The Traditional Methods of Procurement for 'Development Projects' have proved inadequate in terms of funding, innovation, risk management, efficiency, managerial skills and value for money. As a global challenge, resources constraints have necessitated the policy change to encourage Private Sector participation in the delivery of economic and social infrastructure and other public services hitherto provided by the public sector. Nigeria finally took a major step towards accessing the benefits of PPPs in 2005. The topic centered on **Alternative Methods of Infrastructure delivery: A Quantity Surveyor's Pragmatic Perspectives.**

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Sub-theme ALTERNATIVE METHODS OF INFRASTRUCTURE DELIVERY: A QUANTITY SURVEYOR'S PRAGMATIC PERSPECTIVES

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NIQS National Conference & AGM (EKO 2022)

Theme: Infrastructure Cost Management: Contemporary Issues And Emerging Trends

Venue: The Podium Lekki, 124 T. F. Kuboye Road, By Oniru Market, Lekki Phase 1 via 2nd Roundabout, Lekki-Epe Expressway, Lagos. Tuesday 22nd to Saturday 26th November, 2022.

ALTERNATIVE METHODS OF INFRASTRUCTURE DELIVERY: A QUANTITY SURVEYOR'S PRAGMATIC PERSPECTIVES

INTRODUCTION

The backbone for the development of any nation is the status of its physical infrastructure such as roads and bridges, power generation plants, power transmission and distribution networks, water and sanitation networks, seaports, airports, and railways. These infrastructure projects are extremely capital-intensive in nature and exert pressure on public finances. All these underlying structures forming interrelated systems make people's lives easier, sustainable, and more comfortable

The developing nations in particular have limited resources at their disposal to finance infrastructure. Consequently, the contemporary issues and emerging trends emphasize the need for public sector authorities in developing countries to constantly source for efficient alternative sources of funds in the delivery of infrastructure development projects; deploying appropriate cost management techniques that guarantees value for money in a competitive and transparent procurement methodology. And one of such sources is investment by the Private Sector through Public Private Partnerships (PPPs). As a global challenge, resources constraints have necessitated the policy change to encourage private sector participation in the delivery of economic and social infrastructure and other public services hitherto provided by the public sector.

The paper focuses on the **Alternative Methods of Infrastructure Delivery from A Quantity Surveyor's Pragmatic Perspectives**. Emphases are on principles of public-private partnerships (PPPs) as broad taxonomy for all forms of contemporary procurement methods, issues and emerging trends for infrastructure delivery using efficient cost management techniques as related to PPP procurement methodology. In generic terms, types of PPPs are classified according to funding, ownership and control. **Funding** refers to the amount of capital investment coming from either partner. **Ownership** could be the state, private or joint; while **Control** refers to the partner that is in charge of the operations and maintenance activities of the PPP. There are several types of PPPs models depending on the stakeholders involved, their ownership arrangements, and allocations of risk between the private and public partners.

This paper will narrow down discussions on **Funding** from the cost management perspectives. Funding as defined above dwells on how cost management are structured in terms of cost management of capital expenditure and operation expenditure (in construction and operation phases); payment mechanisms and revenue regimes; contingency planning and variation management. Pragmatic discussions are on **Templates** for: Request for Proposal; Concession Agreement; Preliminary Project Assessment Form; Options Analysis for PPP Projects; Outline Business Case; Feasibility Study, Concession Agreement, Commercial Case, and Risk Management Checklists. To demonstrate the combination of establishing effective PPP framework; identification, screening, and appraisal of the PPP Projects, **Case Studies** of PPP Projects in: Nigeria, Africa-wide, and World-wide are given in the Appendices.

EMERGING TRENDS

Over the last decades in the developed economies, private-sector financing through Public-Private Partnerships (PPPs) has become increasingly popular as a way of procuring and maintaining public-sector economic infrastructure in sectors such as **transportation** (roads, bridges, tunnels, railways, ports, airports), **social infrastructure** (hospitals, schools, prisons, social housing), **public utilities** (power generation/transmission/distribution networks, water supply, waste water treatment, waste disposal), **government offices** and other accommodation, and other **specialized services** (such as communications networks or defense equipment). Public-Private Partnerships therefore, have made governments think and behave in new ways that require new skills from professionals in construction, financial and legal sub-sectors of economies worldwide.

STAKEHOLDERS IN THE PPP STRUCTURES

Structuring PPPs is complex because of the need to reconcile the aims of the large number of parties involved. The **Private Sector** side has Investors, Lenders, and Companies providing construction and operational services. The **Public Sector** side has public authorities (regulatory bodies) creating and implementing PPP policies as well as those actually procuring the PPP (procuring entities – MDAs); while the **General Public** is the Users who use the facilities that a PPP provides.

CONTEMPORARY ISSUES

Project Finance Payment Mechanism

A PPP allows the Capital Costs (CAPEX) of a Public-Sector facility to be spread out over its life rather than requiring it to be charged immediately against the public budget. This cost is then either paid for by Users ('**Users Pay'** for the Concession Model) instead of paying taxes, or charged to the Public-Sector Budget (**"Government Pay"** for the PFI Model) over the life of the PPP Contract; in either case through the payment of **Service Fees**. This will afford governments, opportunities to tap from the efficient and management skills of the Private Sector in managing resources as well as risks and rewards sharing associated with the provision of infrastructure using Project Finance mechanism under PPP precepts.

Value for Money

Best Value for Money (VfM) in public service delivery, or in public procurement, involves a comparison of which option, or bid, provides the highest ratio of **Net Benefits to Overall Cost.**
Simply put, VfM allows a comparison of different means of delivering the project objectives and their expected economic and social impacts alongside their expected costs.

This is important in PPP because different options or bids may result in higher or lower risks, or better quality outcomes. Traditional procurement usually selects bids on the basis of lowest cost and assumes that the outcomes are the same for all bids.

The decision of whether to procure services by means of PPP or Traditional procurement should also be based on an assessment of which option is likely to result in the best Value for Money. It is important to ensure that the best value for money solution or bid is also affordable at key stages in the project appraisal and procurement process.

Public Sector Investment Decision

There is need to know how the Public Authority decides to invest in new public infrastructure, and whether doing so via a PPP is the right approach.

There are various measures which a Public Authority may use to determine if an investment in new public infrastructure is economically justifiable. Additional factors need to be taken into account to make this decision regarding:

i. Value for Money (VfM)
ii. Affordability and
iii. Balance-Sheet Treatment.

Ever since, the demand for funding for public-sector projects is almost **infinite**, and resources are **limited** (even with the help of a PPP programme), the decision to proceed with a project is based on other factors beside the financial measures. Hence, to carry out **economic justification** when deciding if an investment is economically justifiable, a Public Authority must, as matter of necessity:

a) Identifies the benefits and costs of the project, including its indirect effects.
b) Prepares a cost–benefit analysis (a key element of which is the discount rate to be applied to future benefits and costs) and
c) Calculates the economic return of the project.

The discounted Net Present Values derived from the Public Sector Comparator and Shadow Bid Models (adjusted for tax) are compared at the public sector test discount rate to demonstrate the preferred procurement methodology – PPP or conventional procurement – and the expected annual payments for Viability Gap Funding or any Availability Payments are compared to the expected future budgets. Payments for the service by users are assessed against Willingness to Pay Survey Data to ensure that the project revenues are Realistic and Affordable.

In addition, a Sensitivity Analysis is conducted to gauge the financial robustness of the project (i.e. to see how changes in key assumptions impact the financials of the project). Some variables to consider are:

- Changes in construction period, phasing and project duration
- Changes in inflation rate, interest rates
- Changes in construction costs
- Changes in operating costs
- Changes in market demand
- Changes in the discount rate used in the Value for Money analysis

In cases where the project returns are not found to be sufficient or where the sensitivity shows the project to be too risky, the possibility of re-balancing the net cash flows (increasing revenues or decreasing costs) or obtaining government financial support (e.g. subsidies, guarantees, viability gap funding, etc.) may be explored.

Other Contemporary Issues are:
Transparency
Competition
Risks Transfer or Sharing
Affordability

TAXONOMY AND STRUCTURES OF CONTEMPORARY PROCUREMENT METHODOLOGIES

There are several types of PPPs models depending on the stakeholders involved, their ownership arrangements, and allocations of risk between the private and public partners, thus, it should be noted that classifications and structure of the PPPs arrangements are strictly in accordance with the level of: **Funding, Ownership and Control.**
Because of the general characteristics of the PPPs, their "Financial Models" and the "Deal Structures" are normally developed on case by case basis through the financing technique known as 'Project Finance', which provides the high ratio of Long-Term Debt Financing required for such projects. Therefore, according to E.R. Yescombe (2011):

Project Finance – "is a method of raising Long-Term Debt Financing for major projects. It is a form of 'Financial Engineering', based on lending against the cash flow generated by the project, and depends on a detailed evaluation of a project's construction, operating and revenue risks and their allocation between investors, lenders, and other parties through contractual and other arrangements".

Defining PPPs may be herculean task as there is no universally acceptable definition due to the complex nature of structuring individual deal on case by case basis. However, recognized Institutions and Agencies have defined and used **Public Private Partnerships** and **Concessions** interchangeably generically. But this paper treats Concessions as one of the forms of PPP agreements for alternative method of infrastructure delivery on long-term basis. Such notable Institutions and Agencies are: Infrastructure Concession Regulatory Commission ICRC, Nigeria; World Bank and Inter-American Development Bank (Concessions for infrastructure: A guide to their design and award); Institute for Public Private Partnerships (IP3); Asia Development Bank, APMG, etc.

By and large, this paper adopts the definition for PPP as follows:

> "Public-Private Partnership is a Contractual Agreement between a Public Agency (federal, state or local) and a Private Sector Entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public. In addition to the sharing of resources, each party shares in the risks and rewards potential in the delivery of the service and/or facility. The goal is to combine the best capabilities of the public and private for mutual benefits"

Types of Public-Private Partnerships

Below are the different types of "PPP Models" that are in use today in accordance with Deloitte Research (2006) on "Closing the Infrastructure Gap: The Role of Public-Private Partnerships" as alternative method of infrastructure delivery.

i. **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).**

ii. **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.

iii. **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).**

iv. **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).**

v. **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 to the public sector at the end of that period.

vi. **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 to the government.

vii. **Design-Build-Finance-Operate/Maintain/Transfer (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 **(Brown Field of Green Field Projects)**. Some of these models are described below.

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

ix. **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.

x. **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.

xi. **Concession:** The government grants a private entity the 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.

xii. **Divestiture/Privatisation:** 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.

The Table 1 below shows characteristics of the different types of **Public Private Partnerships Delivery Models** comprising **Concessions** and all other forms of PPPs, classified according to type of Contract Duration, Funding, Ownership and Control.

Table 1: Different Types of PPP Delivery Models

Contract Type (Duration) ↓	Characteristics				Service & Payment to Private Sector Contractor
	Asset Ownership	**O&M**	**Capital Investment**	**Commercial Risk**	
Service Contract **(1-3 years)**	Public	Public & Private	Public	Public	Technical Service **Fee paid by government to private sector** for specific services
Management Contract **(3-8 years)**	Public	Private	Public	Public	Private sector manages the operation of a government service and receives **fees paid directly by government**
Lease Contract **(5-10 years)**	Public	Private	Public	Private	Private sector manages, operates, repairs and/or maintains a public service to specified standards and outputs. **Fees are charged to consumers/users and the service provider pays the government rent** for the use of the facility.
Concession, BOT, BOO, DBFOT, etc. **(10-30 years)**	Private & Public	Private	Private	Private	Private sector manages, operates, repairs, maintains and/or **invests in infrastructure to specified standards and outputs. Fees are charged to consumers/users**. The service provider may also pay a **Concession Fee to the government.**

Note: The fundamental difference between **PPP and Privatization** is that in a Privatization - existing assets are transferred completely to the private sector. But, legislation determines how services are provided to the public through appointed "Independent Regulator" (NERC, NCC, etc.) set up to monitor and in some cases control prices to prevent market abuse.

Concessions/PPP Delivery Models

The following taxonomies of **Concessions Delivery Models** are summarized in Table 2 below for comparative analysis in terms of Funding, Ownership and Control.

Table 2: Features of Different Concessions

Contract Type (Duration 10 – 30 years)	Features				Financial Responsibility
	Asset Ownership	Design	Build	O&M	
Design–Bid–Build	Public	Private by fee Contract	Private by fee Contract	Public	Public
Design–Build	Public	Private by fee Contract	Private by fee Contract	Public	Public
Build–Operate–Transfer (BOT)	Public	Private by fee Contract	Private by fee Contract	Private by fee Contract	Public
Design–Build–Finance–Operate/Transfer (DBFO) /DBFOT	Public	Private by fee Contract	Private by fee Contract	Private by fee Contract	Public, Public/ Private or Private
Build–Own–Operate (BOO)	Private	Private by Contract	Private by Contract	Private by Contract	Private by Contract

Overview of Public and Private Provision of Infrastructure

For clarity, Table 3 shows comparison between the traditional and contemporary methods of delivering "Infrastructure" in terms of: Contract Type; Construction; Operation; Ownership; Who Pays and Who is Paid.

Table 3: Overview of Comparison between the Traditional and Contemporary Methods of Delivering Infrastructure

	PUBLIC	←	→			**PRIVATE**
			←	**Public- Private Partnership**		→
CONTRACT TYPE	**Public-Sector Procurement**	**Franchise (Affermage)**	**Design-Build-Finance-Operate (DBFO)***	**Build-Transfer-Operate (BTO)****	**Build-Operate-Transfer (BOT)*****	**Build-Own-Operate (BOO)**
CONSTRUCTION	Public-Sector (2)	Public Sector (2)	Private-Sector	Private-Sector	Private-Sector	Private-Sector
OPERATION	Public-Sector (3)	Private-Sector	Private-Sector	Private-Sector	Private-Sector	Private-Sector
OWNERSHIP (1)	Public-Sector (4)	Public-Sector	Public-Sector	Private-Sector during construction, then Public-Sector	Private-Sector during Contract, then Public-Sector	Private-Sector
WHO PAYS?	**Public-Sector**	**Users**	**Public-Sector or Users**	**Public-Sector or Users**	**Public-Sector Or Users**	**Private-Sector Offtakers, Public-Sector (5), or Users**
WHO IS PAID?	**N/A**	**Private-sector**	**Private-sector**	**Private-sector**	**Private-sector**	**Private-sector**

Notes * Also known as Design-Construct-Manage-Finance (DCMF) or Design-Build-Finance-Maintain (DBFM).

** Also known as Build-Transfer-Lease (BTL); Build-Lease-Operate-Transfer (BLOT) or Build-Lease-Transfer (BLT).

*** Also known as Build-Own-Operate-Transfer (BOOT).

(1) In all cases, ownership may be in the form of a Joint Venture between the public and private sectors

(2) Public sector normally designs the Facility and engages private-sector contractor to carry out construction on its behalf (design-bid-build).

(3) Public sector may enter into service (outsourcing) contracts (for operation and maintenance) with private-sector contractors

(4) Ownership may be through an independent publicly-owned Project Company, i.e. Public-Public Partnership

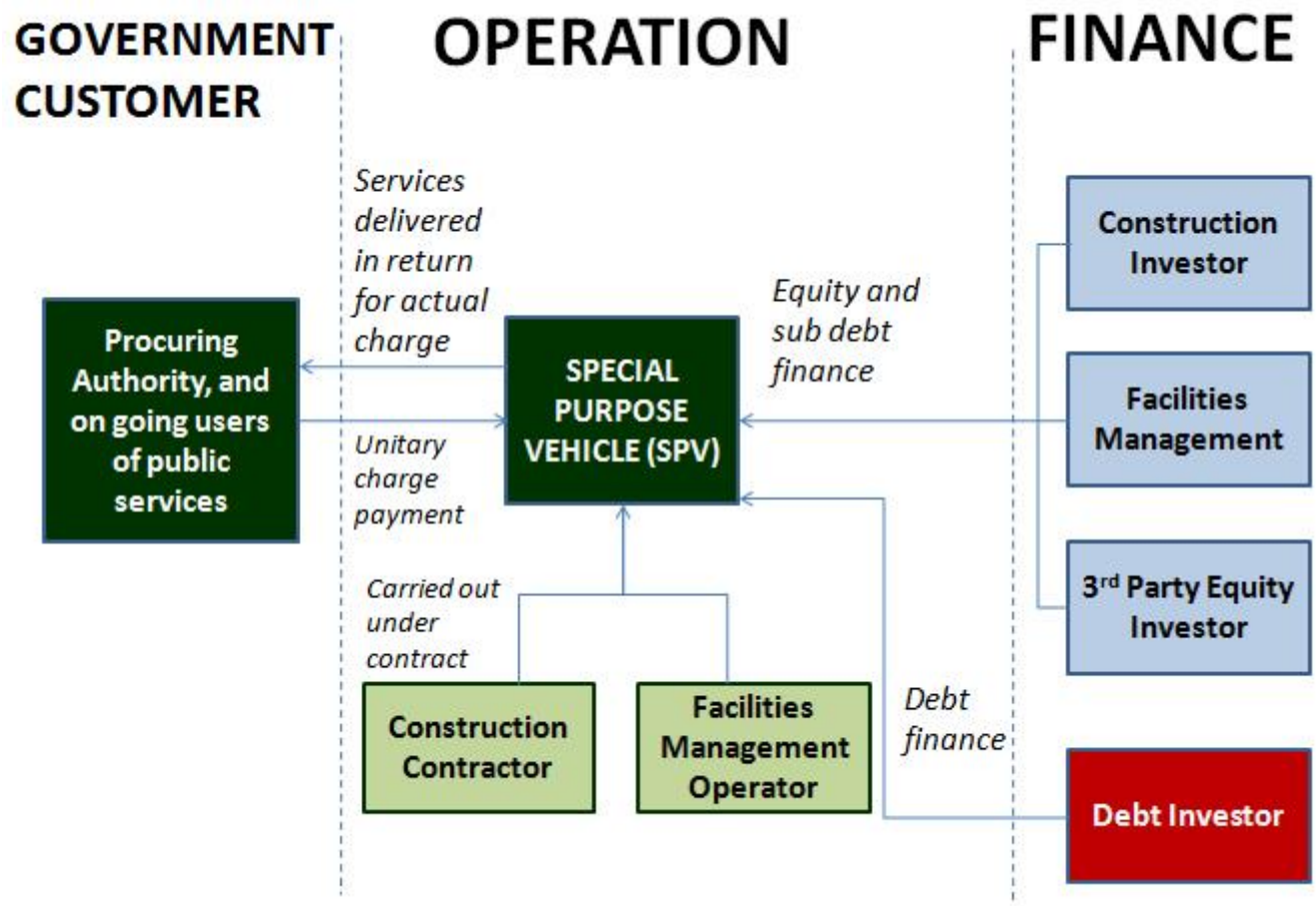
(5) The BOO Contract Form applies to PPPs in the minority of cases where ownership of the Facility does not revert to the Public Authority at the end of the PPP Contract.

Independent PPP Company (SPV) Structure

In a classically pure Concessions, private sector parties often pool skills and finances in a Consortium that will form the Project Company known as 'Special Purpose Vehicle' (SPV).

The rationale for SPVs is that the risks associated with a project are unique to that project and therefore should be limited to that project. The SPV also allows the private sector consortium to raise **Limited Recourse Funding restricted to the SPV**, thus, protecting the parent companies from the risks of project failure.

Figure 1: Independent PPP Company (SPV) Structure



Notes:

- The capital-intensive nature of PPP infrastructure projects and the associated risks necessitate formation of a separate independent PPP Company, called Special Purpose Vehicle (SPV).

However, other simple forms of contracts between public and private sectors that are not candidates for Project Finance not considered here as PPPs are as follows:

- ✓ In some cases, a PPP Contract may involve major upgrading of existing infrastructure rather than a 'greenfield' construction, such as acquisition or management of existing public infrastructure **without any major new capital investment or upgrading** is not considered to be a PPP as defined here.
- ✓ Similarly, private-sector provision of soft infrastructure (services), which involves no significant investment in fixed assets (and hence no need for private-sector financing), falls into the category of **'Outsourcing'** rather than PPPs.
- ✓ A simple Joint-Venture (JV) Investment between the public and private sectors is not a PPP unless linked to a PPP Contract.

General Characteristics of PPPs

From the discussions so far and beyond the diverse definitions, PPPs/Concessions generally, have the following **Key Elements** in common:

i. A long-term contract (a 'PPP Contract') between a Public-Sector Party and a Private-Sector Party – mainly used for Service provision over a period of time

ii. The Design, Construction, Financing, and Operation of public infrastructure (the 'Facility') by the Private-Sector Party – often involves construction of new assets (Greenfield Project)

iii. Private Financing - the private sector partner raises project finance through Equity and/or Debt finance. The project is usually owned (or leased) by one or more Equity Investors during the project term. Debt finance, in the form of Bank Loans or Bonds, also can be raised to at least partially finance the construction and operation of the project.

iv. Payments over the life of the PPP Contract to the Private Sector Party for the use of the facility - made either by the Public-Sector Party (PFI model) or by the general public as Users of the facility (User Fees- in these cases, the PPP Company will need to recover their investment from the project revenues, i.e. mainly user fees rather than from government directly) depending on the PPP model being adopted.

v. The Facility remains in or reverts to Public-Sector Ownership at the end of the PPP Contract (except in BOO model).

vi. The Private Sector Party is normally a Special Purpose Company (the 'Project Company), created by Private-Sector Investors specifically to undertake the PPP Contract.

vii. Allocation of Risks (real risk transfer to Private Sector) - optimal sharing of risks and responsibilities between the public (macro-economic stability) and private sector.

viii. Concession Term linked to Economic Life of Asset (i.e. the tenure of the contract is such that it typically covers the entire economic life of the asset).

ix. Public Sector monitors performance – performance-based payment mechanism.

x. Service Requirements (Output Standards and Specifications) stated by the Public Sector-producing effective output specifications involves defining the ends without being prescriptive about the means for meeting these outputs. A PPP can be structured in such a manner that the contract includes a performance-based payment mechanism. The recurrent payment may depend on whether the services provided meet the specified performance standards as well.

xi. Viability Gap Funding / Availability Payment – without prejudice to the type of PPP model, a PPP is only structured to include VGF/availability payments when total income does not cover total project costs to make the project financially viable and bankable and to attract private investors. Availability payments but not VGF, are also used in PPP Social Infrastructure or Soft Infrastructure Projects, where the user charges are payable to the SPV or private sector services provider solely by the Public Sector, as part of the agreed payment mechanism for the provision of those services.

xii. Service Performance Standards - To ensure that the Private Sector Concessionaire or Service Operator fully understands the minimum Service Levels (LOS) that the Public Sector requires for the PPP project in question, it is necessary for the Public Sector to describe in general details in the RFP, a full set of minimum performance standards for the requested services, covering the availability of the assets provided by the private sector concessionaire and the required minimum service levels. These performance standards are backed by an incentive or penalty system for rewarding or punishing the private sector operator for service levels delivered above or below the agreed performance standards.

Public-Private Partnership Projects Life-Cycle

The following are the 4 (four) Stages in PPP Project Life-Cycle.

1. **Initial Feasibility (Development Phase)**

This is the period during which the Public Authority considers whether direct 'Public-Sector Procurement' or indirect 'Procurement through a PPP' is the appropriate route, and decides in principle to proceed with the project on a PPP basis. The presentation of the project, taking all the necessary factors into account for political approval within the Public Authority (MDAs) or to Governments at Federal/State level is known as the 'Business Case', which is often publicly available in form of **"Outline Business Case" (OBC)**. The Public Authority needs to set up a Project-Management Structure to manage the **process** thereafter. The Outline Business Case is a decision tool prepared by the Project Team to provide the government with sufficient early stage information to make a decision on whether or not to proceed with the project, and if so under what strategy. It is prepared and submitted to the Economic Management Team or PPP Bureau for approval, as set out in the relevant PPP Policy. The Outline Business Case usually involves a pre-feasibility analysis to establish that the identified project has sufficient merit to be taken forward by the MDA.

It is a process that involves bringing together the following information gathered during project preparation:

- Strategic Needs Assessment
- Analysis of the Service Delivery Options
- Technical analysis of options and outline design
- Preparation of a Risk Matrix which identifies all of the project risks and allocates them to the party best able to manage them
- Financial modelling of the risk-adjusted project costs and revenues, including sensitivity and value for money analysis for government, in the form of a Public Sector Comparator
- Project viability assessment for private investors using a shadow bid model incorporating financing costs and debt service cover ratios
- Economic cost benefit analysis
- Project Implementation Plan
- Compilation of the Outline Business Case Report

The purpose of developing an Outline Business Case is to combine all project development information, including technical, legal, social, economic, financial, and environmental aspects, into one document prior to seeking the government's approval to proceed to the procurement phase. The Outline Business Case also sets out the proposed project structure, such as a PPP, the procurement process for awarding the contract, the required resources and proposed management arrangements. The Outline Business Case is the critical document of the project preparation phase.

2. Procurement Phase

The period during which:

i. Pre-qualification of Bidders: MDAs draft Bid Documents, Advertisement for EOI and RFQ done, bidders pre-qualified.

ii. Preparation of Bid Documents: full Request for Proposals is issued to pre-qualified bidders, Bids are requested and received, evaluated using the evaluation criteria and a Preferred Bidder is chosen and Negotiations with preferred bidder commence.

iii. A **Special Purpose Vehicle** (SPV) of Project Company is formed, in whose name the PPP Contract and the various Subcontracts for Construction, Service Delivery, Operation, Maintenance, etc. (all of which are known collectively as the '**Project Contracts'**) are negotiated.

iv. The Public Authority's **Due-diligence process** is completed.

v. The Investors' Equity Investment and the Lenders' funding are put in place.

vi. Preparation of Full Business Case **(FBC)** and Contract Award: OBC updated, OBC is used prior to commercial close and formal award of a contract, government via FEC gives formal approval for the contract award, conditions precedent (e.g. obtaining permits, finalization of the financing documents with time limits) are included in the Concession Agreement (CA), Investors/Lenders carry out due diligence to assess the risks involved in financing the project, all Subcontracts finalized and SPV established before Financial Close is achieved and the Project ready for implementation.

vii. The end of the Public-Procurement Phase is known as **'Financial Close'** (or the '**Effective Date')**, i.e. the point at which all the inter-linked **Conditions Precedent (CP)** for the Project Contracts and the funding are met and construction of the Facility can begin.

3. Construction or Implementation Phase

Once a project has reached Financial Close, the Public Authority's relationship with the Project Company (and through the Project Company with the Investors, Lenders, and Subcontractors) is one of Contract Management. During the Construction Phase, the Project's Debt and Equity investment are drawn down, and these funds are used to build the Facility. The end of this process, when the Facility is formally accepted as being available for use as specified in the PPP Contract is known as the Service Availability Date (or the Service Commencement Date).

4. Operation Phase or Contract Maturity

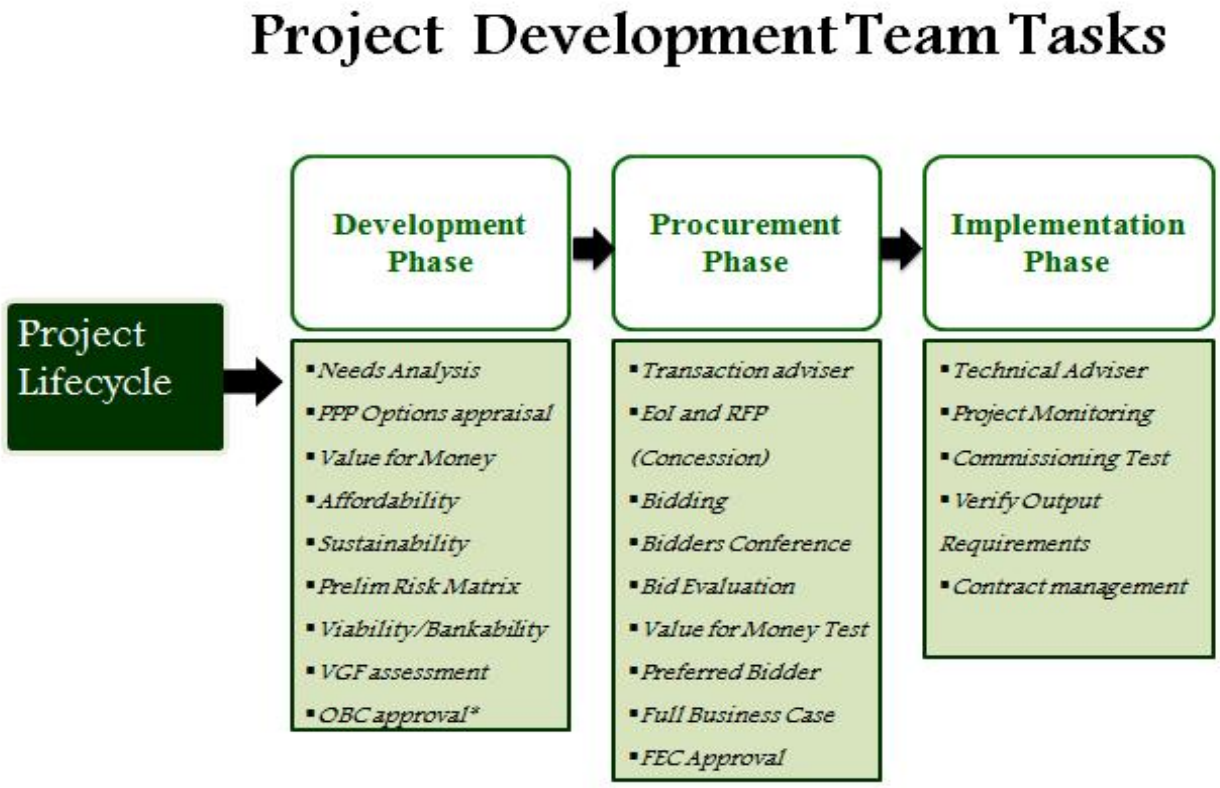
The period during which the Facility provides:

i. The Services required by the PPP Contract
ii. Produces Cash-flow to pay the Lenders' Debt Service, and the Investors' Equity Return. The Public Authority's Contract Management role continues.
iii. Exit and Transfer: completion of the contract period that leads to the natural termination of the concession agreement, exit from the project by the PPP Company, transfer of land and assets back to the MDA, decision by the MDA on appropriate next steps including re-tendering the project to the private sector or in some cases extend the project term.

Throughout the above mentioned four (4) Phases, the Public Authority (MDAs) uses the Services of Specialized External Advisers. Such Transaction Advisory Services are the emerging service offerings which Quantity Surveyors (QS) need to be re-trained to offer.

"ICRC Nation Policy on PPP and Its Supplementary Notes" and other publications of ICRC such as: "Typical Steps to follow in a PPP over Federal Government Infrastructure Procurement" and "PPP Manual for Nigeria issued by the ICRC" are relevant reference literature for PPP Procurement Methods. Below is the PPP Project Development Team Tasks as shown in Figure 2.

Figure 2: PPP Project Development Team Tasks



Source: ICRC "PPP Manual for Nigeria"2012.

PUBLIC PRIVATE PARTNERSHIPS: DEVELOPMENT AND STRUCTURES

Project Finance for Power Purchase Agreement (PPA)

The Power Purchase Agreement (PPA), developed in the United States in the 1980s, provided the template for modern PPP Contracts. Under a PPA, the Investors are paid a 'Tariff' split between:

a. **An Availability Charge** (also known as a Capacity Charge) for making their power station available to provide power to the utility - this covers the Capital Expenditure (CAPEX) involved in building the power station and its fixed Operating Expenditure (OPEX).

b. **A Usage Charge** (also known as a Variable Charge) for the marginal cost of generating power as and when required by the electricity utility - this mainly covers the cost of the fuel used to generate the electricity (e.g. coal or natural gas).

Project Finance for Power Purchase Agreement (PPA) is well-suited to financing PPP projects. Although such techniques had existed previously in the natural-resources sector, the project-finance structures used to fund Power Purchase Agreement (PPA) have provided the basis for funding all types of PPPs. An important aspect of Project Finance is the passing of the risks mentioned above from the Project Company to Subcontractors.

Figures 3- 5 show how this "risk transfer" fits within the main **Building Blocks** for typical

(i) Power-Generation Project - **Power Purchase Agreement (PPA)**

(ii) Project Finance for a Road Concession - **Concession Agreement**, and

(iii) Project Finance for a PFI School Project **- Project Agreement**.

(Note: The Arrows show the direction of Cash-flows.)

For Figure 3, the Main Components in the **Structure** are:

- **Project Company** - owned by Private-Sector Investors
- **Financing -** for the Project's Capital Costs through Shareholder Equity and Project-Finance Debt
- **Engineering, Procurement and Construction ('EPC') Contract -** under which the Contractor agrees to deliver a completed and fully-equipped ('Turnkey') power station to the required specifications, at a Fixed Price and Schedule
- **Fuel-Supply Contract -** under which, say, coal or natural gas is provided to fuel the power station's turbines.
- **Operation and Maintenance ('O&M') Contract -** under which an O&M Contractor agrees to operate and maintain the plant on behalf of the Project Company
- **PPA with an Electricity-Distribution Company –** that makes payments based on Availability and Usage Charges
- **Surplus Cash-flow after payment of Fuel and Operating Costs** - which is used **firstly** for payments of Loan Principal and Interest ('Debt Service') to the Lenders, and **then** to give a Return on Investment to the Investors ('Distributions'). The Subcontractors take over many of the key risks.

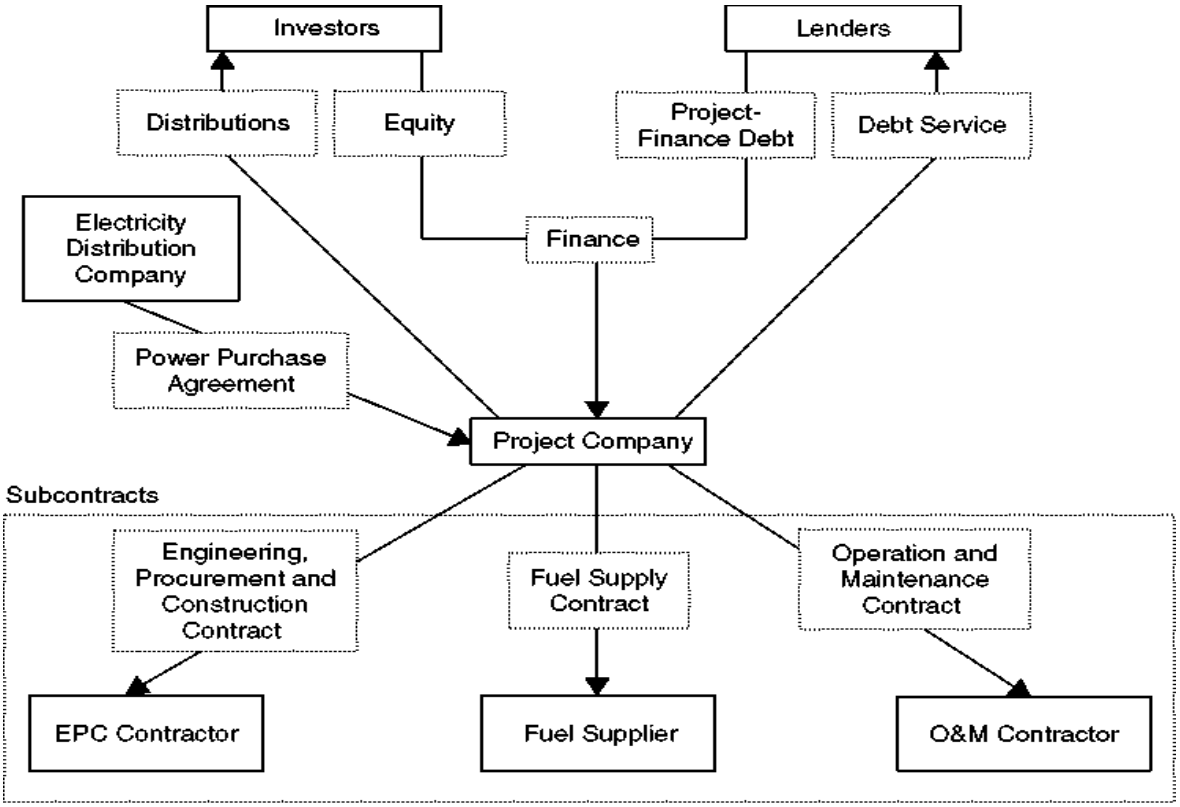


Figure 3 Project Finance for a Power Purchase Agreement (PPA)

Project Finance for Road Concessions

The main Contractual and Financing **Building Blocks** for a Road Concession is as shown in Figure 4. The resemblance to the 'spider diagram' above for the Power Project is evident, the most important difference being the Source of Revenues (from TOLLS).

Here, the Key Elements in the **Structure** are:

- **Project Company** - owned by Private-Sector Investors;
- **Financing** - for the Project's Capital Costs ('CAPEX') through Shareholder Equity and Project-Finance Debt.
- **Design & Build Contract -** under which the contractor agrees to design and construct the completed road and related works (e.g. toll booths) to the required specifications, at a fixed price and schedule.

- **Operating Contract -** under which a Toll Operation Company provides Services such as manning the toll booths, minor repairs, accident management, etc.
- **Maintenance Contract -** under which Maintenance Company provides road-maintenance services.
- **Concession Agreement** - (a standard name for this type of PPP Contract) with the Public Authority, which allows the collection of "Tolls" from Road Users; it does not usually involve any payment by or to the Public Authority in this PPP Model.
- **Cash flow after Operating Costs** ('OPEX') - mainly payments on the operating and maintenance contracts being used, **firstly,** for Debt Service, and **then** to pay Distributions to the Investors.

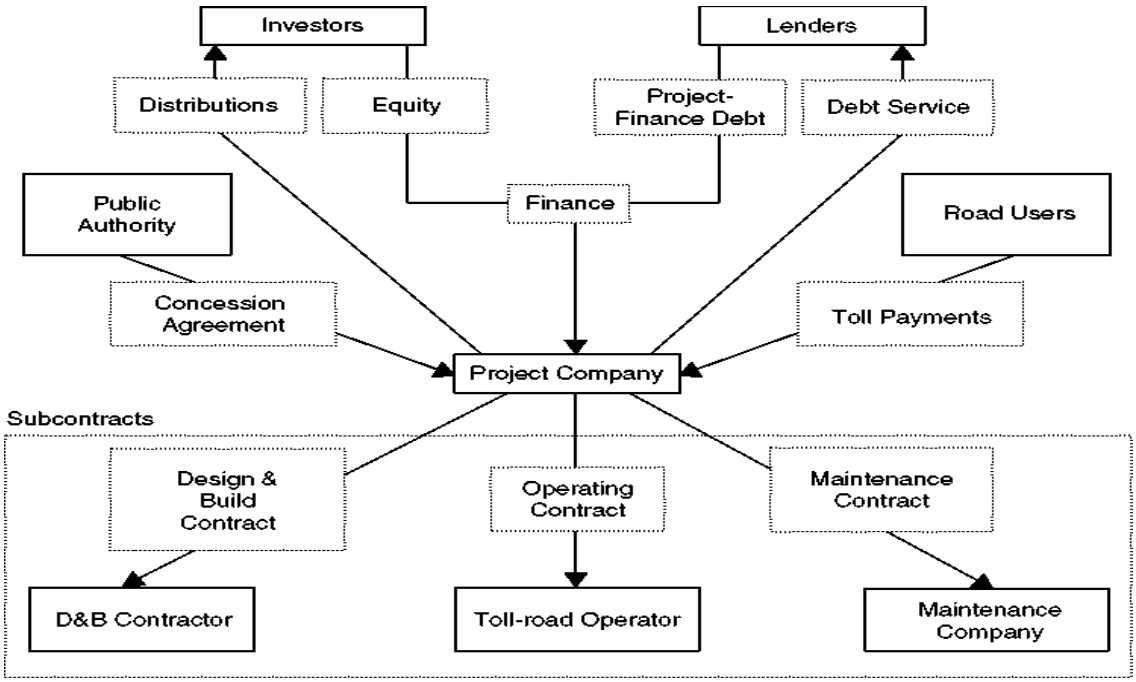


Figure 4 Project Finance for a Road Concession

The PFI Model

Figure 5 shows the main **Building Blocks** for a School Project on the PFI Model.

The resemblance to a PPA is evident. Here the Key Elements in the **Structure** are:

- **Project Company** - owned by Private-Sector Investors
- **Financing of the Project's** CAPEX through Shareholder Equity and Project-Finance Debt.

- **D&B Contract** - under which the contractor agrees to construct the school to the required specification, at fixed price and schedule.
- **'Soft' Facilities Maintenance** ('FM') Contract - under which a Service Company provides Services such as Security, Cleaning and Catering for the School.
- **'Hard' FM Contract** - under which Maintenance Company (or the original D&B Contractor) provides building-maintenance services.
- **Project Agreement** - (a standard name for a PFI-Model Contract) with the Public Authority.
- **Cash-flow after OPEX**— mainly, payments on the Facilities Maintenance Contracts is used **firstly**, for **Debt Service,** and **then** to pay Distributions to the Investors.

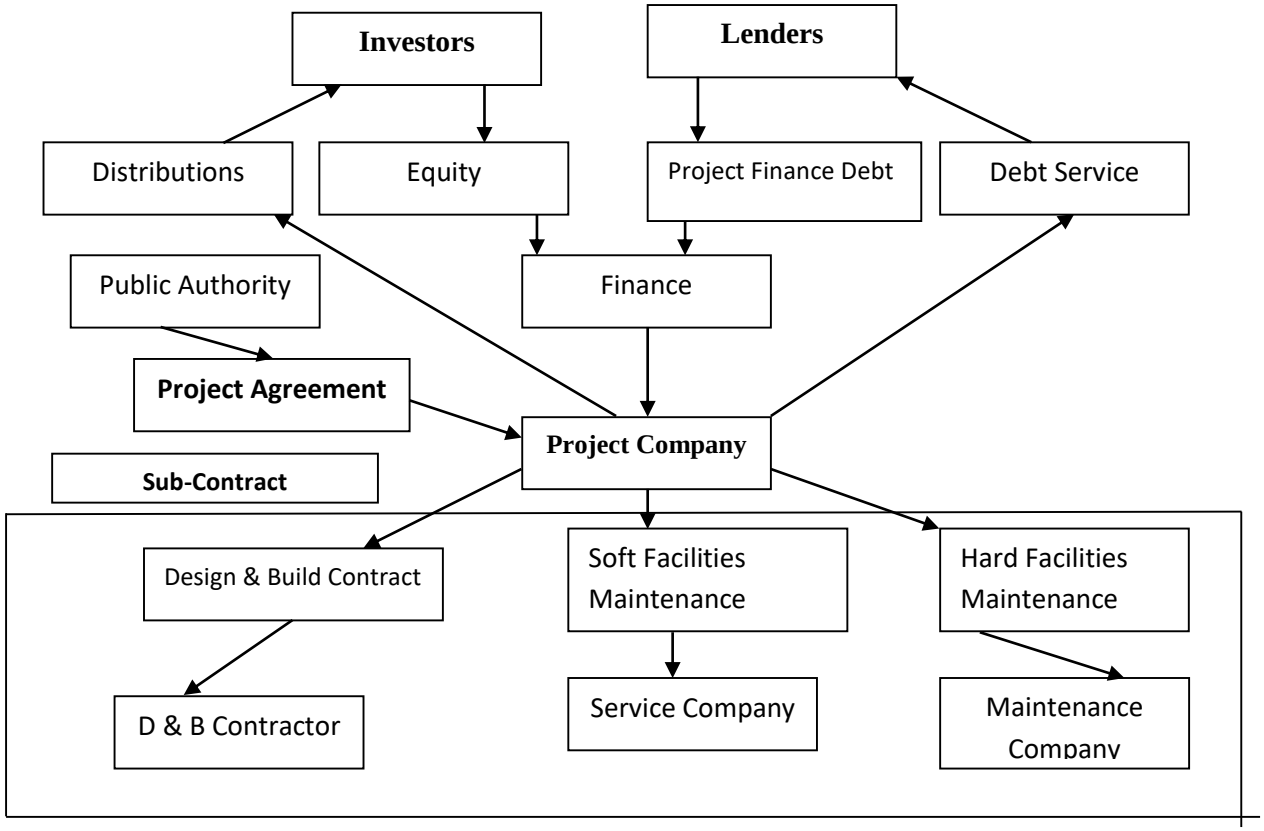


Figure 5 Project Finance for a PFI School Project

PROCEDURES FOR PPP PROCUREMENT

Procurement Procedures

Only ***effective competition*** i.e. an efficient procurement procedure can generate VfM for the Public Authority. A competitive public-procurement process is a legal requirement in most countries where services are being provided to the public (as in a Concession), or a public contract is involved (as in the PFI Model), and it is generally also required if funding or guarantees are being provided by Multilateral Banks, such as IFC, World Bank etc.

The Bidding Process

Typical types of public procurement procedures adopted by most developed countries are:

a. **Open Procedure** - This procedure allows anyone to bid.
b. **Selective Procedure** - This procedure allows the Public Authority to reduce the number of prospective bidders through a pre-qualification procedure.
c. **Limited Procedure** - Under this procedure the Public Authority approaches prospective bidders directly rather than calling for tenders (with or without pre-qualification).

The Limited Procedure is unlikely to be appropriate for a PPP. EU law allowed for three types of bid procedure:

1. **Open procedure -** As under the GPA—not normally used for PPPs.
2. **Restricted Procedure -** Under this procedure, following pre-qualification, the requirements of the bid may be discussed with Bidders, and then Tender Documents are issued.
3. **Negotiated Procedure -** The Negotiated Procedure is intended for complex contracts where bidders may provide different solutions for the service concerned, and the basis for bidding the overall pricing cannot be easily specified in advance, so requiring further discussion after bids are received.
4. **Competitive Dialogue -** Under this procedure, following pre-qualification the Public Authority discusses the form of PPP Contract and the technical specifications of the project with the pre-qualified bidders. Tender documents are then issued.

Market Soundings

Whatever the formal Procurement Procedure, the Public Authority needs to take some initial steps to confirm that its own view of the basic viability of its PPP project is shared by major Private-Sector Participants in the market. This is normally undertaken by making Preliminary Market Soundings, explaining the concept behind the project. Clearly the Public Authority needs to ensure that no party is given an advantage through having been involved in these soundings, and in some cases the best way to do this may be to hold an Open Public Meeting. In parallel with this, Stakeholders need to be kept fully involved.

Pre-Qualification

A 'Request for Qualifications' (RFQ) or call for 'Expressions of Interest' (EoI) from prospective Bidders is usually the first formal stage in the Bidding Process for a Public-Sector Contract. The project is advertised in official publications—Tenders Journal or National Newspapers and the Financial and Trade Press. Interested bidding groups are provided with a Summary of the Project and its Requirements (insofar as these can be specified in advance of proposals), and they are invited to set out their qualifications to undertake the project, demonstrating:

i. Technical capacity to carry out the project (either directly or via specified major Subcontractors)
ii. Experience and performance with similar projects
iii. Financial capacity to carry out the project

Pre-qualification may go a stage further by drawing up an Initial Short-list of Bidders (typically 3 (three) or 4 (four), if the relevant procurement rules allow this (World Bank procurement rules, for example, do not).

Bidding Procedure & Tender Documents

There are a variety of names for the Tender Document package, depending on the nature of the bidding procedure:

Bidding Procedure

i. ***Restricted Procedure*** - Invitation to Tender (ITT), Invitation to Bid (ITB) or Request for Proposals (RFP)
ii. ***Negotiated Procedure*** - Invitation to Negotiate (ITN), or Project Brief
iii. ***Competitive Dialogue***—Invitation to Competitive Dialogue (ICD)

Tender Documents

The Tender Documents are accompanied with an information package which sets out, e.g.:

i. General Legislative and Policy Background
ii. Project raison d'être (the most important reason for the project e.g. project objectives).
iii. Service Requirements
iv. Support to be provided by the Public Authority, either financial or through building a connecting road
v. Data on the Market e.g. Traffic Flows for PPPs where Usage Risk is being transferred to the Private Sector
vi. Draft PPP Contract i.e. (Concession Agreement (CA)), including risk-transfer provisions (Risk Register), Performance Specifications and Proposed Pricing Formula
vii. Programme for Site Visits, Bid Meetings, and Procedure for Clarifications
viii. The Form of Bid required
ix. Bid deadline
x. Bid-Evaluation Criteria
xi. Overall Project Timetable.

Bidder's Response

The Bidder's response to the Tender is likely to be required to cover issues (each response carries Weighted Scoring Percentage) such as:

i. Technology and Design
ii. Construction Programme
iii. Service Standards and Delivery
iv. Details of Subcontracts and Subcontractors
v. Management Structures for both the Construction and Service Delivery/Operation Phases
vi. Quality and Safety-Assurance Procedures
vii. Commercial Viability (e.g. traffic or demand projections for a Concession)
viii. Insurance Coverage
ix. Project Costs
x. Financing Strategy and Structure
xi. Qualifications or Proposed Amendments to the Proposed Draft PPP Contract i.e. CA
xii. Proposals for the Service Fees.

Communication with Bidders

Whatever the Bid Procedure, the same information should be made available to all bidders, e.g. by:

i. Holding Bidders Conference and site visits which all attend, which can be helpful to flush out any major issues which Bidders may have with the project; and
ii. Copying written answers to questions or issues raised by one bidder to all of them, without indicating who asked the original question.

Bidders should be given a ***specific point of contact*** within the Public Authority, and should not be allowed to make contacts elsewhere in the organization.

Where discussions with Bidders during the Bidders Conference lead to modifications in the Bid Requirements - in such cases, the Bid Schedule may have to be delayed to give Bidders enough time to deal with these modifications. On the other hand, Bidder Confidentiality (Confidentiality Agreement) has to be respected, e.g. where there may be several different solutions to executing the project.

Bid Evaluation

A method is needed to compare the Bids with each other, and Bidders need to understand clearly what they have to do to produce the Best Bid. There are various approaches for comparing the Bids:

i. Price Comparison

If the bids can be submitted on virtually identical bases then the final decision may be a question of simply comparing the ***Service Fees***, although it may be necessary to discount the amounts payable in future to an NPV to compare like with like.

The choice of a Discount Rate for this purpose will obviously affect the result. Though adjustments have to be made to address the price comparison, proposed Terms of the PPP Contract, Risk Transfer or bids that are considered to be over-ambitious in their projections of Performance or Financing Plans.

ii. Contract Term

An alternative approach, especially for Concessions, is to fix the Service Fees and then ask Bidders to bid for whatever "Term of PPP Contract" they require - obviously the shortest Bid wins. Variants on this approach are to leave the Term open-ended, and terminate the PPP Contract when:

a. The **rate of return** (IRR) required by Bidders is achieved - here the ***lowest required rate of return*** wins the Bid; or
b. The NPV of Revenues required by Bidders has been reached - here the Bidder ***with the lowest required NPV of Revenues*** wins the Bid.

But all these approaches raise similar issues to a simple price comparison.

iii. Level of Subsidy

Some Tenders are not based on the basis of the price to be charged for the service, but the ***level of subsidy*** to be provided by the Public-Sector. This approach is relevant if the Bid relates to a Concession where it is known that Service Fees will not produce sufficient revenue to cover the funding required for the project. Conversely, bids may include payments by the Bidders instead of to the Bidders.

iv. 'Most Economically Advantageous' Bid

A more complex system is based on 'scoring' different aspects of the Bid such as giving points for design, speed of completion, reliability, quality of service, risk assumption by the bidder (i.e. transfer of risk away from the public sector) and any other characteristics that are important to the Public Authority as well as the price; thus, identifying the Bid that is the ***'most economically advantageous'*** to the project. The weight to be given to different factors should be set out in the ITT/ITN.

Weightings are obviously quite project-specific: e.g. if Bidders are likely to rely on the same design or technology solutions, ***Service-Fee Cost*** might be weighted 70%, but if there is much scope for innovative solutions, ***Technical Proposals*** might be weighted 70%.

Commercial Viability

When evaluating Bids, it is always worth stepping back and considering whether the Bidders' Proposals make Commercial sense i.e. if the Bid is accepted, ***"would the Facility be provided on viable terms for all parties" - Investors, Subcontractors, the Public Authority and End-Users?*** Contracts that give a disproportionate advantage to one side are vulnerable as an aggrieved party will obviously make use of any flaw in the contract to get out of an unduly onerous obligation.

Post-Bid Negotiation

Post-Bid Negotiations (*i.e.* after the Public Authority has appointed a Preferred Bidder) should not happen in the Restricted Bid procedure, and are undesirable, even if permitted, in the Negotiated procedure. Such negotiations can sometimes drag on for long periods of time. The reasons for these delays (and the need for negotiations in the first place) include:

i. Lack of adequate preparation by the Public Authority before launching the bid process.
ii. The Public Authority changing its mind about the requirements after the bid process has begun, perhaps because of Affordability problems.
iii. Poor programme management by the Public Authority and a failure to drive the project forward.
iv. Tripartite negotiations with the Lenders, if their commitment to provide funding has not been secured before the Bid is presented.

v. Environmental, Planning or other Site-related Issues which were not dealt with before the Bids are submitted (thorough ESIA).

vi. Issues arising from the ***Due-Diligence Process*** on the part of the Public Authority, the Lenders or other parties such as Subcontractors.

Early Warning: Any significant delay between appointment of a Preferred Bidder and Financial Close almost inevitably leads to rises in project costs, and hence in the Service Fees.

Bid Award

Fairness and Transparency in the Bidding Process are essential. If Bidders do not understand or trust the process, or do not believe there is a genuine competition in which they have a good prospect of winning, it is evident that the best results will not be achieved. Thus, a full and detailed record should be kept of the Bid comparisons and why a particular Bidder was chosen (indeed, this is often a legal requirement). *It is a common procedure for the losing Bidder to be given a briefing on why the winner was chosen in preference.*

OTHER PPP PROCUREMENT ISSUES

The following are other PPP Procurement issues of importance to be addressed in the PPP Project Life-Cycle Process

i. Funding Commitments
ii. Lenders' Due Diligence
iii. Bid Consortium Changes
iv. Bonding
v. Payment of Bid Costs
vi. Legal Challenges
vii. Unsolicited Proposals
viii. Public Authority's Due Diligences
ix. Project Design

x. Subcontracts
xi. Financing
xii. Financial Close
xiii. Contract Management
xiv. Project Design
xv. Subcontractors
xvi. Construction Supervision
xvii. Acceptance
xviii. Operation Phase
xix. Final Maturity, Residual-Value Risk and Hand-Back

CONTRACT MANAGEMENT

In line with the Theme of the Conference, the paper now dwells on how **CONTRACT MANAGEMENT of the Operations Phase** is structured to achieve COST **MANAGEMENT** of capital expenditure and operation expenditure (in construction and operation phases); payment mechanisms and revenue regimes; contingency planning and variation management. The focus will be on the Contract Management of the Operations Phase. Although the Operations Phase contains different aspects in comparison with the Construction Phase, the mechanism for applying good practice Contract Management therein does not differ significantly from the Construction Phase.

The Contract Management Mechanisms that need to be put in place to monitor the private party's performance, legal, and financial changes that might happen over the Operations Phase. The Operations Phase in this context is taken to be the contract duration from the time that the asset has been constructed and commissioned, right through to the project exit and hand-over of the asset back to the government.

Thus, the Contract Management activities required by both parties during the Operations Phase are as follows:

- Monitoring of non-compliance and under-performance of the private partner against the output specification under the contract.

- Changes in ownership and/or transfer shares.
- Refinancing and how Refinancing Gains are shared.
- Oversight of the renewal plan, renewal investments, and renewal fund management.
- The exit and hand-over strategy.

In the previous phase, the private partner delivered and commissioned the different components of the project. The government implemented its contract management framework, ensured that both the private partner and the government performed their obligations, and managed stakeholder interfaces. In this phase, the private partner delivers services in accordance with the output specification in the PPP contract and maintains the project assets. The government monitors the private partner's compliance and performance against the contract. The government also exercises its contractual rights in relation to such matters as changes in the project and services, changes in ownership and/or transfer of shares in the private partner, refinancing, and infrastructure renewals. In the lead up to termination or expiry of the contract, the government implements its exit and handover strategy. At the end of this phase, the PPP reaches the end of the PPP process cycle as shown in Figure 6.

Transition from the Construction to Operations Phase

Between the end of an asset's construction and the beginning of its operation, there is a substantial transition period where most, if not all, of the professionals who designed, installed, and verified the initial condition of the asset cease to be involved. A new team of people begins to run the asset, taking on the phase with far greater costs and environmental impact. This shift in personnel presents one of the greatest risks to the parties' ability to bridge the gap from construction to efficient operations.

During the earliest and most critical phases of planning and design, not all members of the ideal team are present. The facility manager is rarely present during design discussions. Yet, the person expected to manage operations and maintenance staff and effectively uphold the performance of a facility should clearly have input during the design phase. In addition, the facility manager should play an important role in ensuring that the trade-offs between construction costs and operating and maintenance costs are fully considered (it may be beneficial to spend more upfront on higher quality construction, as this may reduce operating and maintenance costs over the long term, or vice versa). However, this person is only consulted much later in the process.

In effect, the operations and facility management staff cannot be expected to achieve the performance set forth in the design. Therefore, the government should ensure that its project plan includes the work to be undertaken to prepare for the transition period after post preferred bidder stage. The plan, referred to as the transition plan, should include dependencies, time scales, and resources.

Contract Management and Monitoring during the Operations Phase

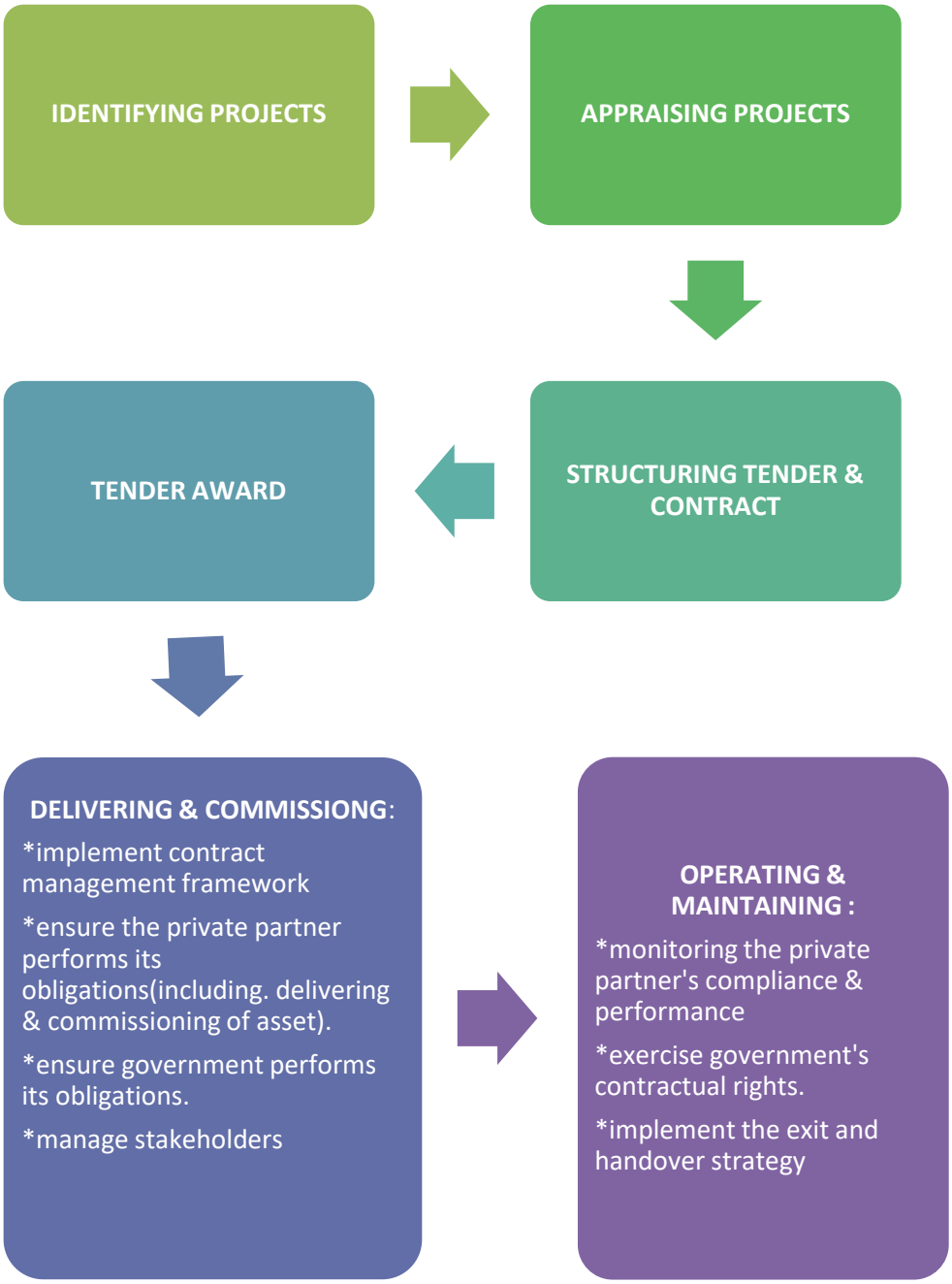
Importance of Contract Management and Monitoring

The principles of contract management and monitoring in construction and operational phases. The principles of the governance, structure, and function remain the same throughout the Operations Phase. However, during the Operations Phase, key actions for the contract monitoring team change, covering areas such as managing payment regimes, including insurance and utilities, acting on the results of customer surveys, looking for continuous improvement in the service, and performance monitoring. Sound contract management throughout the operational phase will have the following traits:

*Maximize the chances of contractual performance in accordance with contractual requirements by providing continuous and robust contract management which supports both parties.

- Optimize the performance of the project.
- Support continuous development, quality improvement, and innovation throughout the life of the contract.
- Ensure delivery of best value.
- Provide effective management of commercial risk.
- Provide an approach that is auditable.
- Support the development of effective working relationships between both parties.
- Encourage effective and regular communications underpinned by clear communication mechanisms.
- Allow flexibility to respond to changing requirements.
- Demonstrate clear roles, responsibilities, and lines of accountability.
- Ensure that all works and services are in compliance with legislation, relevant health and safety requirements, and council procedures.

Figure 6: Where We are in the Process Cycle



Reasons behind Unsuccessful PPP Projects during the Operations Phase

- The government paying for services which are not being received or are not being performed satisfactorily
- The project not performing as anticipated, thus jeopardizing project benefits.
- Changes to the balance of risk negotiated in the contract.
- The government is unable to foresee operations and management (O&M) contractor failure or put in place contingency measures.
- A breakdown in relationship with the O&M contractor.

Contract Management and Administrative Process

During the Operations Phase, key activities that must be included in managing the PPP contract are:

- monitoring and managing project delivery and performance against service outputs.
- monitoring and managing changes permitted in the contract.
- Managing changes not provided for in the PPP Contract.
- managing disputes.
- managing handover processes at the end of the contract.

MANAGING FINANCES

Payment Mechanisms

There are two primary types of revenue regimes. The first is one in which the government pays the fee on a regular basis for the provision of the facilities and services stipulated in the contract, with or without deductions being made for performance (government-pays PPPs), and its structure and process of calculation is referred as "**payment mechanism".** The second is that used when the revenue for the private partner is primarily from user fees (user-pays PPPs).

The mechanism by which the private partner receives revenue with which it covers its costs, services its debt obligations, and generates a profit must be linked to the performance of its obligations under the PPP contract. The very heart of risk transfer and, therefore, Value for Money lies in the degree to which the private partner is incentivized to deliver the required services so as to receive the maximum amount of revenue.

In government-pays PPPs, the revenue stream almost exclusively comprises regular payments from the government. In user-pays PPPs, the source of revenue is predominately the users of the infrastructure, such as a port, toll road, or airport.

Features of Revenue Regimes and Payment Mechanisms

For government-pays systems, when designing the payment mechanism (besides taking into account risk transfer, Value for Money, and affordability), three other factors need to be taken into account: performance indicators and the initial performance targets for those indicators; regular measurement during the Operational Phase and the link between those indicators; and the appropriate payment deductions. The payment mechanism should be built on clear performance measures linked to the service performance and key performance indicators. They should be simple and objective, as well as linked to penalty deductions that are equal to the private partner's under-performance. They should not be linked to profitability and should not unduly affect the viability of the project.

If the private partner in a user-pays PPP under-performs, it faces reduced demand and will be penalized by a corresponding loss of revenue.

Managing the Budget during the Operations Phase

When considering the budget and its management during the Operations Phase of a PPP contract, one of the most important tools needing to be taken into consideration, as well as managed and updated throughout the phase, is the Financial Model. The financial model is used by both parties in order to manage budgets as well as to quantify the effects of variations and external events on the parties.

The financial model forms a critical component of a PPP project throughout its life cycle. Initially, a model is developed by the government or its appointed advisor in order to predict the private partner's costs, financing structure, and other outputs in order to assess the acceptability of the cost to the government. During the bidding (procurement) stage, the preferred bidder will have developed its own financial model and reflected the specific cash flows required to deliver its proposal.

The preferred bidder's financial model ultimately becomes the base case financial model and part of the PPP contract (the preferred bidder's model is used rather than government's model, as the preferred bidder's model reflects the actual base case for the project, whereas the government's model was a model of a hypothetical bid for the project that does not reflect the solution being delivered by the private partner). The financial model continues to be used throughout the actual period of construction and operation by the private partner and the government to review long-term prospects and risk exposure. It is also used to consider price variations and compensation payments in terms of the PPP contract, to calculate any potential refinancing gain (if the contract requires the private partner to share this with government), as well as the amounts payable in the event of variations. In government-pays PPPs, the unitary payment will need to be adjusted on a regular basis to take into account inflation- and performance-related deductions and penalties. Occasionally, the payments will need to be adjusted in specific circumstances, such as delay or additional cost risks not borne by the private partner, force majeure events, and so on. In all such cases, the adjustments, the budgets, and even long-term sustainability assessments are based on the financial model. All changes to the financial model need to be recorded accurately and agreed between the parties.

Managing Contractual Payments

Effective financial administration involves the development of systems and procedures to make and receive financial payments and to keep records of financial transactions. In preparing the PPP contract, the government should include procedures for making unitary payments and additional payments to the private partner, administering penalties and/or deductions, calculating inflation, dealing with late payments, and receiving reports linked to unitary payments and additional payments.

The contract should also require the private partner to prepare financial statements and enable the government to monitor key financial indicators, such as gearing, debt cover ratios and internal rate of return, as well as calculation of the compensation sums due by the government in the event of an early contract termination (for example, following a serious default or a mutual desire to terminate the partnership early).

The government should also ensure that during the Operations Phase, the management of contractual payments takes into consideration forecasting values with the actual values, resetting the assumptions used to update forecasts based on actual data, restoring key historic data (both financial and performance-related), and performing financial control analyses.

Contingency Planning

Contingency planning is one of the most important steps within the contract management and financial allocation for PPPs. Both the government and the private partner should undertake contingency planning, albeit for different reasons. The private party will, within its cost baseline, set aside contingency reserves as a budget allocated for identified risks which it has accepted and for which contingent or mitigating responses are developed. Contingency reserves are often viewed as the part of the budget intended to address the "known-unknowns" that can affect a project. For example, the re-work of some project deliverables could be anticipated, but the amount of this re-work may be unknown. Contingency reserves may be estimated to account for this unknown amount of re-work. Such reserves can provide for a specific activity, for the whole project, or both. The contingency reserve may be a percentage of the estimated cost, a fixed number, or may be developed by using quantitative analysis methods. As more precise information about the project becomes available, the contingency reserve may be used, reduced, or eliminated. Contingency should be clearly identified in cost documentation and is part of the cost baseline together with the overall funding requirements for the project. For the government, contingency planning is related to the risks it retains, for example, land acquisition or for funding of variations it requires. It is unusual for the government to maintain explicit reserves, as this is generally discouraged under public budgeting rules. Instead, budget adjustments are made on an annual or semi-annual basis for contingencies that have been realized. A contingency plan should be developed as part of the contract management manual. This plan covers what happens if the private partner fails in its duty to deliver the services, whether as a result of an external emergency or due to issues within the private partner and its sub-contractor group.

It should include emergency planning measures that should be implemented in the event of a major incident that affects the unavailability of all or a large part of a facility. The plan should not be over complicated or extensive because if it needs to be implemented, it is likely to be during a period of high pressure. As a result, it needs to be accessible and easy to implement effectively.

The Contingency Plan should identify the following information:

- Events that will lead to service failure and/or default.
- Impact on the services, both short- and long-term.
- Remedies and time scales in the contract.
- Emergency planning measures in the event of a major incident.
- Communications strategy (internal and external).
- Staff and resources and how these will be mobilized at short notice.
- The steps needed to return the project to normal monitoring post-crisis.
- Any consent that may be required and from whom it is needed.
- A list of key personnel, including their contact information and each person's role and responsibility.

Force Majeure

Although it is highly unlikely, some form of contingency planning for force majeure events needs to be put in place because such events are significant in terms of their impact — and because the associated risk is shared between the private partner and the government. Estimates for the amount of contingency reserves that a party should set aside for force majeure events must be based on the probability of the risk occurring and on the amount of likely shortfall that would arise from insurance proceeds (or the time taken before any such proceeds are received). The focus should be on continuing the services as much as possible after such an event, with the contingency reserve covering the costs of acquiring additional resources to do so. For the government, it is likely that any contingency reserve to meet the government's costs associated with force majeure events would be part of a larger government-wide contingency reserve managed by the finance department/ministry.

As such, the procuring authority should keep the finance ministry/department informed of any increased force majeure risks. The private partner would more typically maintain some sort of access to additional (stand-by) equity or debt facilities, and pay some availability fee to maintain such access. It generally does not make sense to maintain a large contingency reserve in the form of cash as this is an expensive use of funds.

Termination

Although compensation payable upon termination is a significant amount in most PPPs and almost always requires disbursement by the government (see section 10 below), it is not the norm for the government to maintain any contingency reserve for termination payments. This is partly because the probability of termination is generally very low and partly because the causes of termination are often under the control of the government. Therefore, maintaining a contingency reserve would be unnecessary. Instead, the risk of termination following a breach by the private partner should be regularly monitored and reported to the relevant ministry/department.

Managing Renewal Funds

The revenue collected by the private partner by way of a unitary charge payment, user fees, or a combination of user fees and government payments will include amounts to cover the private partner's anticipated future expenditures on maintenance and renewal of assets over the life cycle of the PPP. The obligation to do such maintenance, overhauls, and renewals remains with the private partner. The public partner, as well as the lenders, requires that money needed for such maintenance, overhauls, and renewals not be paid out as distributions to shareholders. The financial model will have provided for the anticipated costs in accordance with a schedule prepared by the private partner and monitored by the lenders and the government. The risk of adequate life-cycle arrangements for the assets remains with the private partner. The funding of renewals is enabled through building up a life-cycle renewal fund over some years. This should be done in anticipation of the significant capital expenditure that such renewals require in future periods.

A renewal fund is drawn down at times of such renewals (and overhauls of existing plant and equipment), and then refunded (topped up) on an ongoing basis. The need for a life-cycle renewal fund is related to the concept of depreciation. Depreciation is recognition from an accounting perspective that the value of an asset declines over time, while the life-cycle renewal fund is recognition from a practical perspective of the need to build up cash to meet the costs of periodically renewing the asset to restore its value and functionality. In this regard, the private partner is rewarded for efficiency in managing such a fund in that at the end of the PPP contract period, the cash balance remaining usually belongs to the private partner. The government needs to ensure that the assets are maintained and renewed. It should therefore have the ability to conduct a final survey toward the end of the contractual period. At that time, it needs to either withhold payment of the unitary charge or require that the private partner put a performance bond in place if the assets are not restored to the required standard (normally of remaining residual life at the end of the contract period). The private partner should also prepare a maintenance and renewals report which shows the costs incurred and payments made to and from the renewals fund, any deferrals of maintenance and renewals, and a revised and updated renewals plan for the remainder of the contract period.

Variation Management

Variation management is closely connected with PPP agreement management and relates to the creation of mechanisms to enable changes to the PPP Agreement. Such changes may be necessary as a result of a change in circumstances that could not be anticipated or quantified when the PPP Agreement was signed. Variations may involve changes to works, services or the form of delivery.

The four main categories of variation types include:

- Variations that involve no additional costs.
- Small works variations.
- Government variations.
- Private party variations.

There are procedures for all of these categories, which must be applied in cases of changes to the PPP agreement regarding works, services, and the means of delivery. Given the length and complexity of PPP agreements, it is likely that these procedures will be invoked from time to time to deal with changing project needs. Variation procedures must be used effectively to ensure that other important functions, such as performance management and risk management, continue to operate in line with contractual requirements and changing service delivery imperatives. The contract management team must become familiar with all of the intricacies of each variation procedure and ensure that the correct steps are followed whenever the need for change arises.

Other Related Areas of Cost Management

At operational phase of PPP, the follow events could impact Cost Management of the PPP project significantly:

- **Changes in Ownership**
- **Refinancing**

The EPEC PPP Guide defines **Refinancing** as one of or a combination of the following:

- A reduction in the debt pricing.
- Extension of the debt maturity.
- An increase in the gearing (that is, the amount of debt relative to equity). This is possible when lenders are prepared to relinquish some of their contractual protection as the perceived project risks are reduced.
- Lighter reserve account requirements.
- The release of guarantees provided by the shareholders, sponsors or third parties of the private partner. The underlying commercial rationale is that, by restructuring its financing arrangements, a private partner is able to raise more debt for the same debt service amount. This typically reflects the fact that, once a project has successfully reached its Operations Phase, the risks for lenders are lower and banks will accept a lower interest rate. The financial benefits derived from this additional debt and/or cheaper debt then becomes a refinancing gain that, under some PPP contracts, is shared between the private partner and the government.

Where taken by the private partner, the refinancing gain is in the form of increased or accelerated distributions to the equity investors, for example. In this case, they are paid out as an extraordinary dividend or an early prepayment of shareholder loans at the time of refinancing.

Where the government receives a share of the refinancing gain, this is typically as a once-off capital amount paid by the private partner or, in the case of a government pays PPP, possibly as a decreased unitary charge payment over time. In a few rare cases, the benefit is taken "in kind" as a pre-funded variation financed with the government's refinancing gain share. This is rare because of the difficulty in estimating the value of the variation at the time of entering into the PPP contract.

CONCLUSION

In conclusion, the paper focused on the Alternative Methods of Infrastructure Delivery from A Quantity Surveyor's Pragmatic Perspectives. Emphases are on principles of public-private partnerships (PPPs) as broad taxonomy for all forms of contemporary procurement methods, issues and emerging trends for infrastructure delivery using efficient cost management techniques as related to PPP Procurement Methodology at Construction and Operational Phases.

All the issues raised in this paper as far as alternative methods of infrastructure delivery are handled differently on case by case basis, depending on the different ways of providing public infrastructure as shown in Table 3. Appendices are veritable reference materials for practice.

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