



Reference Guide for Project Implementation Mode Selection - Waterfall Framework



**Infrastructure Finance Secretariat
Department of Economic Affairs
Ministry of Finance
Government of India
September, 2023**



भारत सरकार
GOVERNMENT OF INDIA

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Government of India
Ministry of Finance
Department of Economic Affairs



September 11th, 2023

Foreword

Over the past few years, the Department of Economic Affairs (DEA) has been actively engaged in developing the appropriate policy framework for private investment in infrastructure development. Public Private Partnerships (PPPs) are being encouraged for execution and operation of infrastructure projects. Besides, schemes and initiatives are being undertaken to provide financial and technical support to promote PPPs.

With infrastructure taking the centre stage, the Infrastructure Finance Secretariat (IFS) under the aegis of Department of Economic Affairs, Ministry of Finance, has strengthened its efforts to build a comprehensive and efficient PPP ecosystem, thus, creating a shelf of viable and successful PPP projects in infrastructure sub sectors. IFS in its continued efforts to build a conducive environment for PPPs has undertaken number of initiatives right from constitution of the PPPAC committee, revamping VGF and IIPDF schemes, strengthening policy and regulatory framework and issuing guidelines and model documents for project structuring.

Given the complexities of the PPP projects, the entire value chain of the PPP infrastructure development requires critical evaluation of commercial feasibility, economic viability and balancing of risks and responsibilities, right from project identification to structuring and finally to its implementation.

Recognizing these requirements, the IFS has come out with a comprehensive Reference Guide for Project Implementation Mode Selection – Waterfall Framework, to aid the PSAs in undertaking well informed - objective selection of the infrastructure project implementation mode, which may enhance the biddability and success of the infrastructure projects.

At present, an overwhelming share of investment in infrastructure development comes from public exchequer. India of Amrut Kaal aspires that infrastructure projects shall be

Contd...

more and more funded by the users through user charges to the extent possible. To achieve this vision, this Reference Guide also includes a chapter on “Project Implementation Mode Selection - Upgradation Mechanisms”, utilizing which the PSAs can move from ‘tax-payer pays’ model to ‘user pays’ model of project implementation.

I hope that this Reference Guide shall be utilized by the PSAs as well as the PPP project appraisal authorities for undertaking systematic due diligence in selecting the most appropriate PIM for the infrastructure project. I would like to compliment the efforts of Shri B. Purushartha, Joint Secretary, and his team, for bringing this initiative to fruition.



Ajay Seth

Secretary, Economic Affairs



Photo

Foreword

Over the years, PPPs have emerged as an important tool for infrastructure development and service delivery. A well-structured PPP brings efficiency, transparency, accountability and value for money in the delivery of infrastructure services. With the sustained efforts of the DEA to promote PPPs, India has fared well in PPP global benchmarks. India ranked 4th globally in terms of private sector investment commitments as per the World Bank PPP 2021 H1 report. Further, as per World Bank PPI Annual Report 2021, India is South Asia Region's largest PPP investment destination.

The Infrastructure Finance Secretariat (IFS) in the DEA is consistently working towards developing policy initiatives and guidance documents for strengthening the PPP ecosystem. One of such initiatives is the development of a comprehensive "Reference Guide for Project Implementation Mode Selection – Waterfall Framework". Given the complex nature of PPP projects, Project Implementation Mode selection is critical to ensure that PPP projects are aligned with the Project Sponsoring Authority's objectives and are financially sustainable. It also helps to identify and mitigate risks associated with the project.

This Reference Guide is an attempt to bridge the perceived gap in understanding of the nuances of selecting a Project Implementation Mode and is designed to assist the PSAs in achieving the best fit for the divergent objectives of the public and private sectors. In addition, the Reference Guide also provides guidance to the PSA for upgrading the PIM towards those models of project structures which are less dependent on public expenditure and more dependent on private investment with user charge based funding and higher risk taking by the private sector.

I hope that this Reference Guide shall be a valuable resource in ensuring that infrastructure projects are implemented through the most appropriate Project Implementation Mode with improved chances of project success, value for money for the PSA and delivery of the intended benefits of the project.

(B. Purushartha)



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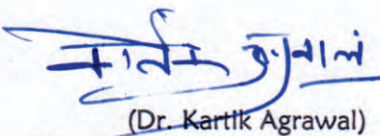
Foreword

Public Private Partnerships (PPPs) play a critical role in infrastructure development by leveraging private sector resources and expertise to improve the delivery and management of infrastructure assets. PPP ecosystem in India has evolved significantly with the introduction of policy and regulatory reforms by the government to facilitate private sector participation.

As the PPP ecosystem continues to develop, there is a growing recognition of the benefits that can be achieved through collaboration between public and private players. PPP models are increasingly being adopted by nascent sectors such as healthcare, education, and housing in addition to traditional and more mature infrastructure sectors such as roads, ports, airports, and power. Such infrastructure projects involve huge capital and preparation requirements. It is, therefore, crucial to ensure that these projects are feasible, financially viable and provide value for money, which, inter-alia, intricately depends on selecting the most appropriate project implementation mode.

The Infrastructure Finance Secretariat under Department of Economic Affairs, has taken several initiatives to strengthen the PPP ecosystem and develop a conducive environment for PPP. One of such initiatives is this **Reference Guide for Project Implementation Mode Selection – 'Waterfall Framework'** to assist the Project Sponsoring Authorities in selecting the most appropriate mode of undertaking the project, for enhanced success of the project.

It is hoped that the Project Sponsoring Authorities may benefit from this reference guide. The chapter on upgradation mechanisms of project modes is of special interest as it may assist the PSAs in undertaking structured interventions to move to higher project implementation modes, along the 'Mode Waterfall'.


(Dr. Kartik Agrawal)

Disclaimer

This Reference Guide is designed as a practical tool for facilitating decision makers/project sponsoring authorities in deciding the mode of implementation of infrastructure assets.

This document does not aim to provide a detailed guide to project design, appraisal and implementation but rather focuses on several critical issues influencing the selection of a Project Implementation Mode (PIM) for a successful infrastructure project. This Reference Guide is not prepared with the objective of promoting a standard methodology but rather to highlight areas in which particular care and analysis needs to be observed to select the project implementation mode. This is not designed to provide an exhaustive list of PPP structures nor present any structures as having the endorsement of the IFS.

This Reference Guide does not profess to provide a complete methodology. It should be regarded as a guide to the identification and management of key issues affecting the development and structuring of successful infrastructure projects.

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Index

1. Introduction	1
2. Understanding Public Private Partnerships	3
3. Undertaking Public Private Partnerships	11
4. Project Implementation Mode Selection - Principles	20
5. Project Implementation Mode Selection - Waterfall Framework	25
6. Project Implementation Mode Selection - Upgradation Mechanisms	30

Annexures

Annexure – 1 : Memo format to be provided by the PSA	38
Annexure – 2 : Key Initiatives of IFS, DEA to strengthen the PPP Ecosystem	39

List of Tables

Table 1: Definition of PPP by Government Agencies and Multilaterals	3
Table 2: Type of PPP Modes:	19
Table 3: Project Implementation Modes – Comparative Analysis	25
Table 4: Waterfall Framework	29
Table 5: Project Implementation Mode Upgradation Mechanisms	31

List of Figures

Figure 1: Potential advantages & possible concerns in a PPP Mode of Implementation	7
Figure 2: Life Cycle Phases ⁴ of a PPP Project	10
Figure 3: Various models of PPPs for undertaking an infrastructure project	12
Figure 4: Categorization of PPP Models	19
Figure 5: Organizational Structure of PIU of ISD Division of IFS	43

List of Abbreviations used in this Reference Guide

Acronym	Expansion
BOT	Build Operate Transfer
COD	Commercial Operation Date
DBFOO	Design Build Finance Operate Own
DBFOT	Design Build Finance Operate Transfer
EOI	Expression of Interest
EIRR	Economic Internal Rate of Return
GOI	Government of India
HAM	Hybrid Annuity Model
KPI	Key Performance Indicators
MCA	Model Concession Agreement
PIM	Project Implementation Mode
PPP	Public-Private Partnership
PSA	Project Sponsoring Authority
O&M	Operation and Maintenance
OMDA	Operation, Management and Development Agreement
RFP	Request for Proposal
RFQ	Request for Qualification
TOT	Toll Operate Transfer
VFM	Value for Money
VGF	Viability Gap Funding
WACC	Weighted Average Cost of Capital

Chapter 1

Introduction

Recent years have seen a marked increase in cooperation between the public and private sectors for the development and operation of infrastructure for a wide range of economic activities. PPPs present a number of recognized advantages for the public sector to exploit. These include the ability to raise additional finance in an environment of budgetary restrictions, ability to speed up infrastructure development, make the best use of private sector operational efficiencies to reduce cost and improve quality of service to the public. The positive characteristics of PPP arrangements in developing infrastructure appear particularly attractive for India given the enormous financing requirements and the equally large funding shortfall. The need for efficient public infrastructure services, growing market stability and appetite for investment create a favourable environment for private investment.

A long experience of private participation in various sectors like road, power, airports and ports helped in a growing acceptance that Public - Private Partnerships (PPP) arrangements can be used as an instrument to meet infrastructure and service needs in a wide range of sectors ranging from traditional economic sectors like roads to social sectors like health and education.

In order to work successfully with the private sector, public bodies need to be clear about the fundamental principles and objectives behind various modes of PPP. Under PPP arrangements, private sector contractors become long term providers of services rather than simply upfront asset builders, combining the responsibilities of designing, building, operating and possibly financing assets in order to deliver the services needed by the public sector. However, different infrastructure projects are differently suited to various roles and responsibilities of private partner mainly emanating from the selected project implementation mode and structure.

While the benefits of partnering with the private sector in PPPs are clear, such relationships should not be seen as the only possible course of action and are indeed complex to design, implement and operate. PPPs do not offer a miracle solution or a quick fix and should only be used where appropriate and where it is able to deliver clear advantages and benefits. Therefore, PPPs should be carefully assessed in the context of the project, the public benefit and the relative gains to be achieved under various approaches.

The connotation 'Waterfall Mechanism' has been in general parlance for quite some time in the context of infrastructure projects as a mechanism for selection of appropriate project implementation model with focus on PPP. In the Indian context, the BK Chaturvedi Committee

coined the term 'Waterfall Mechanism' in the context of selecting project implementation mode in the context of NHDP (road) projects. However, no formal guide documents is available for decision makers/ project sponsoring authorities. This 'Reference Guide on Project Implementation Mode Selection - Waterfall Framework' extrapolates and expands this concept of Waterfall Framework and provides a working structural mechanism for the entire spectrum of infrastructure projects.

This Reference Guide is an attempt to bridge the perceived gap in the understanding of the practicalities of selecting Project Implementation Modes. The evolving nature of the PPP concept and the need for the expansion of knowledge and capacity enhancement of PPP stakeholders are well recognised and the Reference Guide is designed to assist the PSAs in achieving the best fit for the divergent objectives of the public and private sectors. The Reference Guide seeks to aid PSAs in developing successful infrastructure projects through selecting the appropriate project implementation mode. In addition, it also provides guidance to the PSA for upgradation of the PIM towards those forms of project structures which are less dependent on taxpayers funding or future generation funding and more dependent on user charge funding with higher risk taking by the private sector.

This Reference Guide may be used by the PSAs as a reference document to make an informed decision regarding the best suited mode of project implementation for their infrastructure projects. Further, the appraising authorities may appraise any deviation in selecting PIM from what is determined as per this Waterfall Mechanism. It is expected that this Reference Guide will aid the PSAs and the project appraisal authorities in better appreciating the selection of project implementation mode and subsequent structuring of the infrastructure project.

Chapter 2

Understanding Public Private Partnerships (PPPs)

A PPP is a partnership between the public sector and the private sector for the purpose of delivering a project or a service which is traditionally provided by the public sector. PPP recognizes that both parties have certain advantages relative to the other in the performance of specific tasks. The fundamental characteristic of PPP is that each party is obligated to do what it does best and thereby maximize utility of public services and infrastructure delivery in the economically most efficient manner.

Such collaborations where public and private sector join forces for a shared objective of infrastructure development are termed as Public Private Partnership or PPP. Depending on the model of PPP, the private player may be required to arrange the finance, mobilize resources for the project, improve the effectiveness, efficiencies and quality standards of infrastructure project, etc.

The overall aim of PPP is, therefore, to structure the relationship between the parties in such a way that risks are borne by the respective party best able to manage them and increased value is achieved through the exploitation of private sector skills and competencies. Thus, the main characteristics of PPPs include sharing rights and duties along with risk and reward between both public and private players. PPPs also act as an important channel to improve service delivery and innovation in infrastructure sectors.

PPPs are undertaken in multifarious forms such as DBFOT, BOT (HAM), BOT (Annuity), etc. according to the nature and requirement of the project. As compared to the traditional public procurement contracts, PPPs are complex in nature and therefore, necessitate careful design, structuring and implementation of the project.

2.1. Definition of PPPs

While there are many definitions of PPPs, some of the prominent definitions provided by different agencies are as follows:

Table 1: Definition of PPP by Government Agencies and Multilaterals

Agency	Definition
Department of Economic Affairs	Public Private Partnership or "PPP" is a form of fixed-term contractual arrangement between a public entity on one side and a private entity on the other, for the provision of public assets and/or public services through investments being made and/or management being undertaken by the private entity, may or may not require payment of fee by users, for a specified period of time, where there is well defined allocation of risk between the private entity and the public entity and the private entity's performance is contractually obligated to conform (or are benchmarked) to specified and pre-determined performance standards.

Agency	Definition
Manual for Procurement of Goods, 2017, Department of Expenditure	PPP means an arrangement between the central, a statutory entity or any other Government-owned entity, on one side, and a private sector entity, on the other, for the provision of public assets or public services or both, or a combination thereof, through investments being made or management being undertaken by the private sector entity, for a specified period of time, where there is predefined allocation of risk between the private sector and the public entity and the private entity receives performance linked payments based on performance standards.
Asian Development Bank	PPPs broadly refer to long-term, contractual partnerships between the public and private sector agencies, specially targeted towards financing, designing, implementing and operating infrastructure facilities and services that are traditionally provided by the public sector.
World Bank	PPPs are a mechanism for government to procure and implement public infrastructure and/or services using the resources and expertise of the private sector. Where governments are facing ageing or lack of infrastructure and require more efficient services, private sector partnership can help foster new solutions & bring finance.
International Finance Corporation	PPPs are a tool that help governments leverage the expertise and efficiency of the private sector, raise capital, and spur development. They also help allocate risk across the public and private sectors to where it can best be managed and ensure that resources are wisely distributed in addressing the most urgent development needs.

Source: Compiled from respective websites of the agencies

While there are different definitions or expressions of the term PPP, some of the common features of PPP are quite apparent:

- A PPP is a partnership between the public sector and the private sector for the purpose of delivering a project or service,
- PPP projects involve bestowing of concession, which may include a set of rights to design, develop, build, operate and collect user charges from public infrastructure, to the private party for a fixed period of time with pre-determined KPIs,
- Under PPP mode, either the user or the Government (taxpayers) or the future generation pays for the services provided by the private party,
- One of the main characteristics of PPPs is sharing of risks, rewards, rights and duties, optimally between the parties to the arrangement.

2.2. Roles and Responsibilities of the Parties to a PPP

The two parties involved in PPP projects are the public and the private players. For the success of PPPs, roles and responsibilities of the two parties are to be clearly defined. The principal roles of the parties are enumerated below:

- **Principal roles for the private sector in PPP projects are:**
 - § To mobilize additional capital.
 - § To provide alternative management and implementation skills.
 - § To provide value added services to the consumer and the public at large.

- § To provide better identification of needs and optimal use of resources.
- § To transfer the asset at the end of the concession period in accordance with the terms of the concession agreement.
- **Principal roles for the PSA (public entity) in PPP projects are:**
 - § To identify the need of the project.
 - § To effectively structure the project keeping in mind the interest of the parties involved.
 - § To facilitate the implementation of the envisaged project such as land acquisition, utility shifting etc.
 - § To monitor the project based KPIs during the construction as well as operating stage.
 - § To take over the asset at the end of the concession period (depending on model).

It is important to note here that the roles and responsibilities of the two parties involved in a PPP project may be designed as per contours and requirements of the project.

1.2. Why PPP?

PPP arrangements are not only driven by limitations of public funds to cover investment needs but also by efforts to increase the quality and efficiency of public services. There is a growing acceptance that PPP arrangements can be used to meet infrastructure and service needs in a wide variety of sectors. Success of PPP projects, increasing availability of private sector funds, private sector capacity to adopt a higher risk profile; and a generalized global trend to utilize private efficiencies in infrastructure service provision, have resulted in attempts to introduce the concept of PPPs in all sectors of infrastructure by the Centre and States.

There is a growing understanding among Governments about the existence of:

- An enormous financing requirement in developing world class infrastructure facilities and services for the people at large.
- An equally large financial shortfall in available public funds and the limited ability of public institutions to cover costs.
- Requirement not only to identify additional funding sources but also attention to the more effective use of public funds and to increase their impact.

At the same time, there is a growing realization that cooperation with the private sector, in PPP projects, is able to offer a number of advantages, including:

- **Acceleration of infrastructure investment** - PPPs permit the public sector to translate upfront capital expenditure into a flow of ongoing service payments in future. This enables projects to proceed when the availability of public capital may be constrained (either by

public spending caps or annual budgeting cycles), thus bringing forward much needed investment.

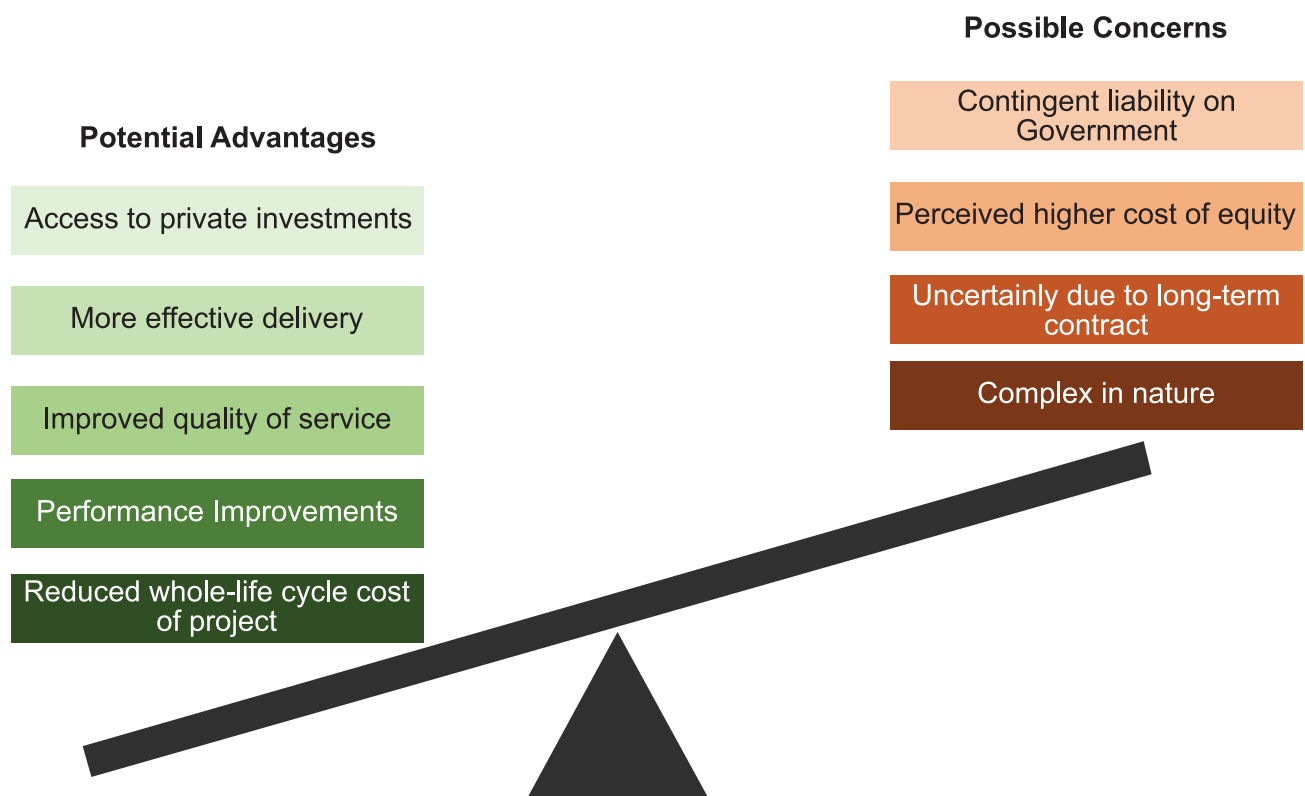
- **Faster implementation** - The allocation of design and construction responsibility to the private sector, combined with payments linked to the availability of a service, provides significant incentives to the private sector to deliver capital projects within shorter construction timeframes.
- **Reduced whole life costs** - PPP projects which require operational and maintenance service provision provide the private sector with strong incentives to minimize costs over the whole life of a project, something that is inherently difficult to achieve within the constraints of traditional public sector budgeting.
- **Optimal risk allocation** - a core principle of any PPP is the allocation of risk to the party best able to manage it at least relative cost. The aim is to optimize rather than maximize risk transfer, to ensure that optimal value is achieved. The success of PPP projects depend on how well the risks are optimally allocated.
- **Better incentives to perform** - the allocation of project risk may incentivize a private sector contractor to improve its management and performance on any given project. In PPP projects, full payment to the private sector occurs only if the required service standards are being met on an ongoing basis, i.e., if the KPIs are met.
- **Improved quality of service** – National and International experience suggests that the quality of service achieved under a PPP is often better than that is achieved by traditional procurement. This may reflect better integration of services with supporting assets, improved economies of scale, the introduction of innovation in service delivery, or the performance incentives and penalties typically included within a PPP contract.
- **Generation of additional revenues** - the private sector may be able to generate additional revenues from third parties, thereby reducing the cost of any public sector subvention required. Additional revenue may be generated through the use of spare capacity etc.
- **Enhanced public management** - by transferring responsibility for providing public services, government may act as regulators and focus upon service planning and performance monitoring instead of the management of the day-to-day delivery of public services. In addition, by exposing public services to competition, PPPs enable the cost of public services to be benchmarked against market standards.

Therefore, PPPs can be used as an effective tool in improving the quality and delivery of infrastructure services. When structured appropriately and implemented in a balanced policy and regulatory environment, PPPs can bring greater efficiency and sustainability to the provision of

public services. PPPs allow for better allocation of risk between public and private entities. PPPs involve investments by private sector which help in reducing burden on government spending and improve fiscal management.

While PPPs can present a number of advantages, it must be remembered that PPPs are also complex to design, implement and manage. The real concern in PPP projects is its innate complexity that is coalesced into long-term concession leading to uncertainties which is not known when the project is structured. Therefore, there should be mechanisms engrained in PPP agreements to adapt to uncertainties that may arise in future. Another concern in PPP projects is the perceived higher cost of capital of the private player. The cost of equity as well as the cost of debt are higher for the private player vis-a-vis the cost of capital for a government instrumentality. Contingent liabilities pose another concern in PPP projects as these probable payments cannot be accurately captured in the books of the Government as they may arise due to certain events such as termination of the concession, which cannot be predicted nor foreseen. However, all in all, the pros outweigh cons of PPP projects as seen in Figure 1 below.

Figure 1: Potential advantages & possible concerns in a PPP Mode of Implementation



2.4 PPP Project Life Cycle

The PPPs are complex contractual arrangements with six broadly distinct phases over the project life. Each of the phases have their own nuances and impacts on the overall success or failure of the project. Each of the six phases are further sub-divided into a number of stages. In this section, a

bird's eye view of the six Phases and various stages of PPP project lifecycle are discussed (Figure 2). It is worth mentioning that like various PPP structures and taxonomy, different phases of PPP project life-cycle as identified hereunder are indicative and may have overlapping stages. The Phases and their stages may be taken up simultaneously if the project contours permit as these are not water-tight compartmentalization. The actual Phases and activities undertaken in any stage may accordingly vary with the peculiar needs of the project.

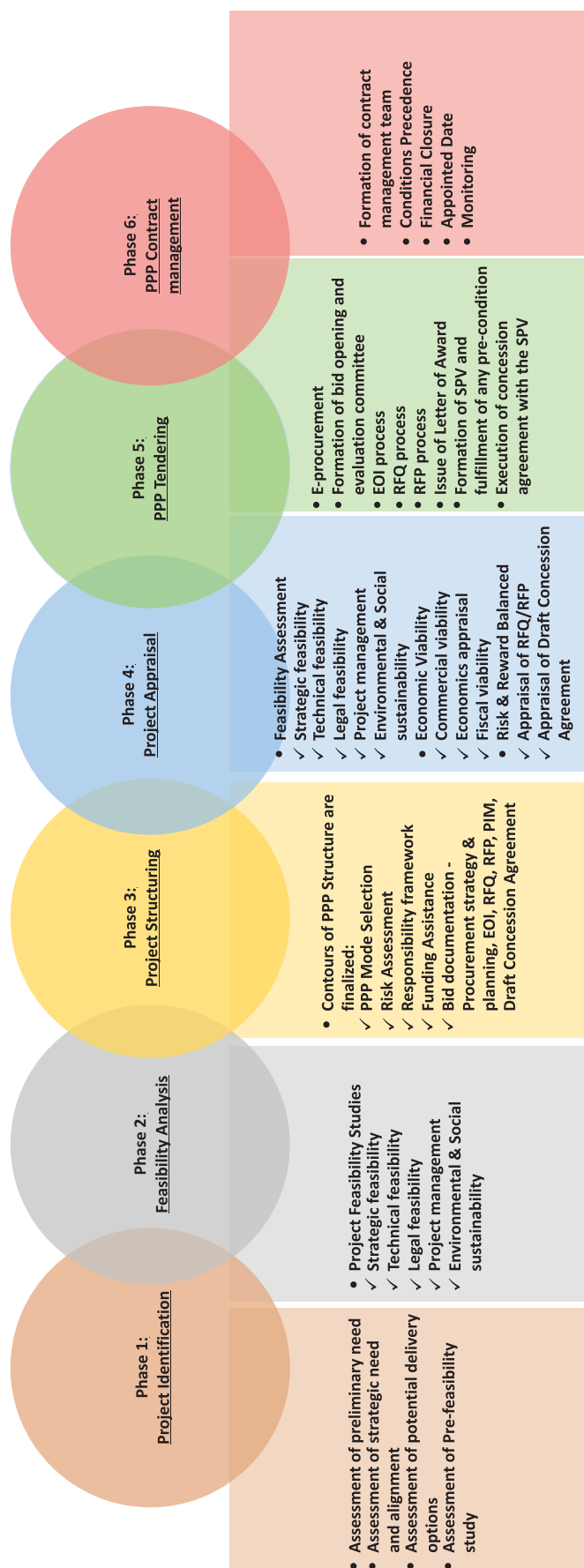
Phase 1 – Project Identification¹: The first and foremost phase in the PPP lifecycle is the project identification phase which requires a 'need analysis' (whether infrastructure asset services are required) for the infrastructure services and an 'options analysis' (ways in which the infrastructure asset services can be provided) for providing the services. The PSA may identify the fundamental need that the proposed project will address along with beneficiaries who will be benefited from the project and the potential project solutions available for the same and a pre-feasibility study is generally undertaken for the same.

Once the need is established, and basis the information available the potential project implementation modes are then evaluated for their suitability through the 'Waterfall Framework' as per this Reference Guide.

Phase 2 – Feasibility Analysis: The potential project implementation mode considered suitable in the Phase 1 analysis are studied in detail through a full-scale feasibility study. This feasibility analysis phase comprises activities such as detailed feasibility assessment of the project including technical feasibility, financial feasibility, economic feasibility, legal feasibility, environmental feasibility, etc. The outcome of this activity is to arrive at whether the project is feasible to be implemented or not including firming up of the selection of the PIM with proposed project structuring. The PIM arrived through the Waterfall Framework may be further subjected to PIM upgradation mechanisms as identified in this Reference Guide, to arrive at the final PIM for the project.

Phase 3 – Project Structuring: Project feasibility analysis is followed by project structuring. At this stage, the contours of project structure are finalized. This stage encompasses risk identification, risk allocation, defining the contractual framework for implementation of the project under PPP mode, outlining the responsibility framework between PSA and private partner, finalizing monitoring parameters and the institutional structure for monitoring of the project and detailing out the disbursement mechanism for funding assistance (if any) from the PSA. In this stage, key performance indicators (KPIs), technical output specifications and operational performance specifications are also defined. Besides, the frequency and format of reporting in line with the defined KPIs is also finalized.

¹IFS has notified empanelment of 12 TAs which may be utilized for end to end PPP transaction advisory. Further, funding for TA cost is being provided under the IIPDF Scheme.

Figure 2: Life Cycle Phases⁴ of a PPP Project

⁴Detailed guidance of the above-mentioned modes of procurement as well as other modes of procurement may be seen in the 'Manual for procurement of PPPs' which is under preparation by IFS

Chapter 3

Undertaking Public Private Partnerships (PPPs)

The PPP process is extremely dynamic and particulars of PPP arrangements are required to be tailored to the specific circumstances involved. Many models of PPPs exist, and more are continuously being developed to suit project specific requirements and characteristics. Thus, understanding of the PPP nuances is a must for any effective PIM selection. The present chapter endeavours to provide a basic background of PPPs and their unique characteristics.

PPPs vis-à-vis Traditional/Conventional Project

For the purpose of selection of PIM for a project, it must be recognized that a PPP project is significantly different from a conventional project including:

- PPP projects are different from conventional projects in terms of mechanism of project development, implementation, and management.
- Unlike conventional projects which are public funded and viability of the project is not a success criterion, a PPP project is possible only when a robust business model with reasonable return on investment can be developed.
- Unlike conventional projects which focus primarily on asset development, the focus of a PPP project is on delivering specified infrastructure services at defined quantity, quality and levels.
- Unlike conventional projects wherein entire risk is borne by the government entity, the risk allocation between the public – private partners is at the heart of any PPP and this makes execution of a PPP much more complex than a conventional project.
- While conventional projects are construction oriented with limited life span and little or no interaction between government entity and private sector, PPPs have much longer tenure making management of the relationship between the PSA and the private party vital for its success.

If structured appropriately, PPPs can generate substantial benefits for consumers and governments. The scope of potential benefit will, however, depend on the type of project being undertaken and the exact terms of the contract governing the PPP.

Therefore, a good PPP project is one which -

1. Ensures implementation by proper designing and structuring.

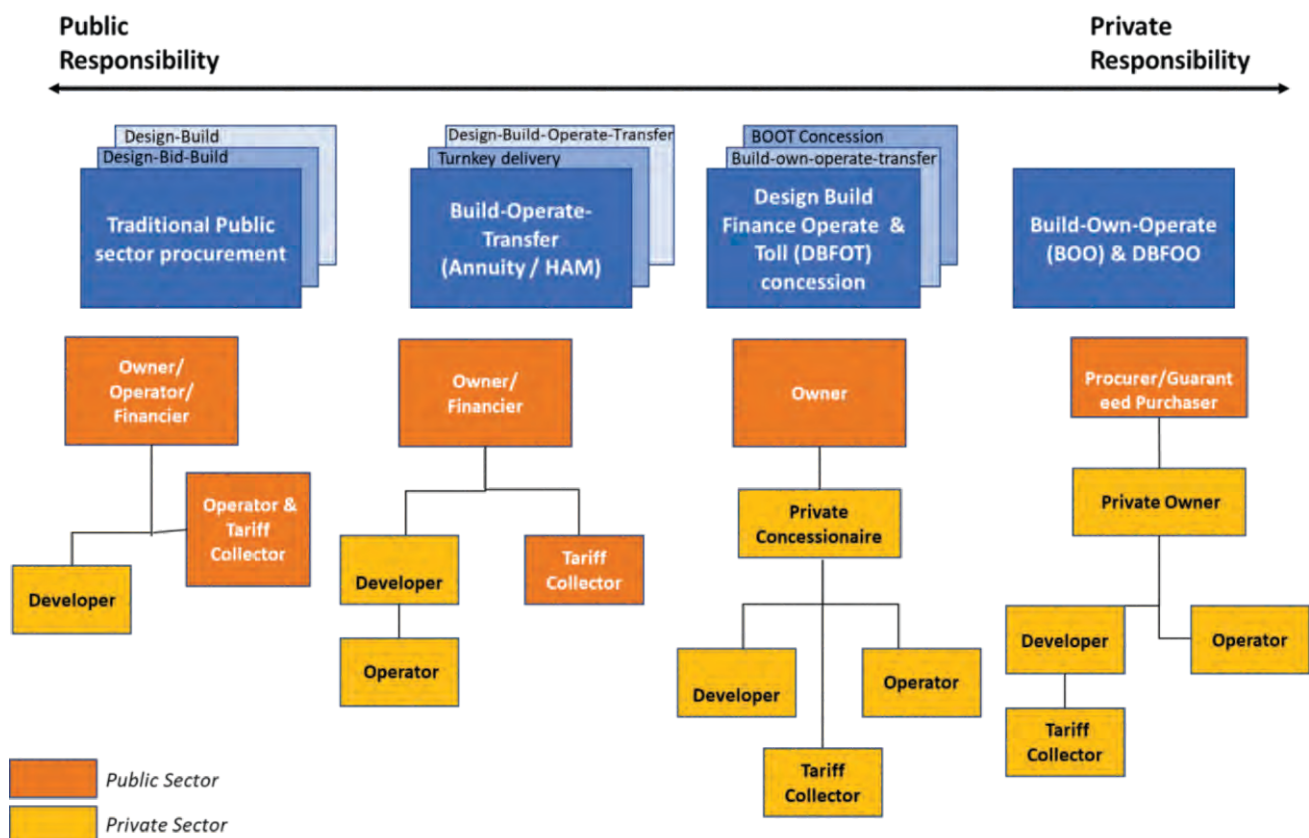
2. Has clarity in scope and unambiguously defines roles and responsibilities of parties.
3. Defines quantifiable and verifiable project output to be attained.
4. Upholds/restores the confidence of an investor.
5. Brings value to the public at large.

3.1 PPP Structures

In the substantially large number of possible and prevalent infrastructure implementation structures including PPPs, the main defining feature is the degree of private control over the assets and involvement in financing. At the same time, many of the individual components used to design and structure specific partnerships (i.e., contract terms, in-kind contributions, financing facilities, or grants) can be used with a number of different approaches. There can, therefore, be no generic or 'best' model of PPP for infra project structuring.

Below is a diagram showing various models of PPPs for undertaking an infrastructure project with allied responsibilities:

Figure3: Various models of PPPs for undertaking an infrastructure project



It is also essential to recognize that the nomenclature used to describe the partnership process has not been standardized. There are several terms often used interchangeably – turnkey and build-operate-transfer (BOT), for example. There are also single terms that are used loosely and can be applied to situations that are fundamentally different. For example, BOT can be used to describe

procurements that involve private financing, as well as those that do not. As such, it is necessary for PPP practitioners to delve beyond the terms and concepts and become familiar with the way in which the partnership process itself works.

The principal criterion for distinguishing PPP structures is the extent of risk transferred to the private party. This criterion also allows each type of PPP to be defined and related to the relevant modes of engaging private parties. While the choice of PPP structures is limitless in terms of financial and operational forms, all PPPs can be defined in relation to the roles and risks assigned to the public and private parties.

While it is not possible to define all possible types of PPPs, it is extremely important for PPP sponsors to develop a detailed understanding of the PPP structure before selecting a particular arrangement. The following sections provide a bird's eye view of the various forms of PPP relationships – models of PPPs - moving from minimal to maximal private sector involvement, based on internationally recognized nomenclature. However, unlike a 'legalistic' definition of PPP or procurement derived from the procurement manuals etc., the nomenclature of PPP models is based on conventions of the extent of risk and responsibility transfer to the private party.

The suitability and effectiveness of various PPP structures to a particular project depends on a lot of factors. Each PPP structure has its own set of strengths and weaknesses whose relevance to the project contours must be assessed in the context of the project. Thus, a particular PPP structure may be applied to a project only where suitable and clear benefits and advantages from the structure can be perceived/demonstrated. It is also possible that the applicable PPP structure may further be tweaked and adapted to the sectoral and project context to achieve the desired impacts and benefits.

3.2 Major Risks assessed for classification of PPP models

A wide spectrum of PPP models has emerged over the years. However, the underlying connotation of each PPP model is the type and extent of major risk borne by the either party. Basis the devolvement and the degree of the major risks, various PPP models can be broadly categorized. It may be understood that though there are myriad risks in PPPs (identified in PPP Structuring Guide and Reference Guide for PPP Project Appraisal), the classification of PPP models is suggested here basis varying degrees of the following major risks identified as the '**Four Cardinal Risks**':

- **Ownership Risk** – risks associated with the Ownership of asset.
- **Finance Risk** – risks associated with the ability of the project to provide reasonable return on its investment (equity and debt). This covers both, ability to raise inexpensive project finance and earn revenues sufficient to service debt and provide return on equity.
- **Design/Construction Risk** – risk associated with the design meeting the KPIs and risk of time and cost overrun during construction phase.

- **Operation Risk** - risk associated with the operation and maintenance of the asset during the concession period so that KPIs are met.

The other risks are an offshoot/variation of these basic Cardinal Risks. Basis the above '**Four Cardinal Risks**' the PPP models can be classified into the following '**Three**' broad categories in order of increasing involvement and assumption of risks by the private sector vis-à-vis the PSA.

3.3 Prevalent PPP models

A wide spectrum of PPP structures has emerged over the years. However, broadly, they are but a variant of the following distinct models. These distinct PPP models are structured basis their relative characteristics with respect to the respective Cardinal Risks being assumed by either the PSA or the private sector. These broad PPP models are:

- I. **Limited Private Participation** - Traditionally, governments have relied on public procurement to develop their infrastructure systems. Designated government agencies are vested with responsibility for developing certain types of infrastructure. These agencies typically elaborate plans prioritizing needs and then arrange the financing, design, and construction of individual projects. Once a project is completed, it is then operated and maintained by the agency.

Under this traditional public procurement model, there is still scope for the government agencies to utilize the services of the private sector for well-defined tasks adopting limited responsibility. Following **three approaches** for outsourcing public functions to the private sector are described below. These approaches present opportunities to engage the private sector in varying degrees in the maintenance, operation and management of infrastructure improvements. This may be undertaken in the following types of structures: -

- **Service Contract** - Public agencies can enter into service contracts with private sector companies for the completion of specific tasks. Service contracts are well suited to operational requirements and may often focus on the procurement, operation and maintenance of new equipment. These tasks could include areas such as toll collection, the installation, maintenance and reading of meters in the water sector, waste collection or the provision and maintenance of vehicles or other technical systems.

Service contracts are generally awarded on a competitive basis and extend for short periods of time of a few months up to a few years. They allow public agencies to benefit from the particular technical expertise of the private sector, manage staffing issues, and achieve potential cost savings. Nonetheless, with service contracts, management and investment responsibilities remain strictly with the public sector. While they afford certain benefits, service contracts cannot address underlying management or cost issues affecting poorly run organizations.

- **Operation and Management Contracts** - Public operating agencies utilize management contracts to transfer responsibility for asset operation and management to the private sector. These comprehensive agreements involve both service and management aspects and are often useful in encouraging enhanced efficiencies and technological sophistication. Operation and Management contracts tend to be short term, but often extend for longer periods than service agreements. Contractors can be paid either on a fixed fee basis or on an incentive basis where they receive premiums for meeting specified service levels or performance targets.

Operation and Management contracts may be used as a means to transfer responsibilities for a specific plant, facility or service provided by an infrastructure owner. They may have a more broad reaching scope involving the management of a series of facilities. Nonetheless, responsibility for investment decisions remains with the public authority. While operation and management contracts should be expected to improve service quality, they cannot be expected to improve service coverage or encourage tariff reform.

- **Leasing** - Leases provide a means for private firms to purchase the income streams generated by publicly owned assets in exchange for an upfront payment or fixed lease payment or revenue share and the obligation to operate and maintain the assets. The difference between an affermage and a lease is just technical. Under a lease, the operator retains revenue collected from the asset and makes lease fee payment to the contracting authority while under an affermage, the operator shares revenue from asset with the PSA. Lease transactions are different from operations and management contracts in that they transfer commercial risk to the private sector partner, as the lessee's ability to derive a profit is linked with its ability to reduce operating costs, while still meeting designated service levels. Leases are similar to operations and management contracts in that the responsibility for capital improvements and network expansion remains with the public sector owner. However, in certain cases the lessor may be responsible for specified types of repairs and rehabilitation.

Under the right conditions, private party entering into lease agreements might also make targeted capital investment in order to develop infrastructure facility, improve operating efficiencies and profit levels. However, responsibility for planning and financing overall investment and expansion programs remains with the public sector owner. Lease agreements can be expected to extend for a period of five to fifteen years. They are suitable for brownfield infrastructure systems that generate independent revenue streams.

The pros and cons of the limited Private Participation models are as follows:

Pros:

- o Can be implemented in a short time.
- o Less complex and easy to implement.
- o Significant private investment possible with development agreement.
- o Generally accepted model for asset monetization.

Cons:

- o In the absence of a development agreement, there is little incentive for attracting private investment.
- o Not applicable for Greenfield projects and hence, generally used for existing brownfield infrastructure assets.
- o Considerable regulatory oversight required to ensure that envisaged outcomes accrue.

II. Integrated Project Development and Operation Opportunities - The private participation in the traditional procurement process involves instances where limited responsibilities are passed to private companies. This limits the potential benefits that the public sector can derive from its partnership with the private sector. Whereas integrated partnerships involve transferring responsibility for the design, construction, and operation of a single asset or group of assets to a private sector partner. This project delivery approach is known by a number of different names, including “turnkey” procurement and the “build-operate-transfer” (BOT) system. From design through operation, BOT contracts can extend for periods of up to 15-20 years. In India, generally, it has taken two models: BOT Annuity and BOT HAM.

The advantage of the BOT approach is that it combines responsibility of – design, construction, and maintenance – functions under one single entity. This allows the partners to take advantage of a number of efficiencies. First of all, the project design can be tailored to the construction equipment and materials that will be used. In addition, the contractor is also required to establish a long-term maintenance program up front, together with estimates of the associated costs. The contractor's detailed knowledge of the project design and the materials utilized allows it to develop a tailored maintenance plan over the project life that anticipates and addresses needs as they occur, thereby reducing the risk that issues will go unnoticed or unattended and then deteriorate into much more costly problems.

The benefits of this “life cycle costing” are particularly important as infrastructure owners may spend more money maintaining the systems than on development. In addition, the

life-cycle approach removes important maintenance issues from the vagaries affecting many public maintenance budgets, with owners often not knowing how much funding will be available to them from year to year. In such cases they are often forced to spend what money they do have on the most pressing maintenance needs rather than adopting a more rational and cost-effective preventive approach.

While the potential exists to reap substantial rewards by utilizing the integrated BOT approach, project sponsors must take great care to specify all standards to which they want their facilities designed, constructed, and maintained - unless needs are identified up front as overall project specifications, they will not generally be met. It should also be noted that an integrated BOT approach alone does not relieve public sector owners of the burden of financing the related infrastructure improvements.

The pros and cons of the integrated Project Development and Operation Opportunities models are as follows:

Pros:

- o Private sector bears a significant share of the risks.
- o High level of private investment.
- o Potential for efficiency gains and innovation is high.
- o Attractive to private investors in an untested or developing PPP market.

Cons:.

- o Complex to implement and administer.
- o Government has direct financial liability.
- o Project structuring and bidding may require long time.
- o May require close regulatory oversight.
- o Contingent liabilities on government in the medium and long term.

III. Partnership Project Development and Investment Opportunities - The structures described above provide opportunities for the private sector to perform tasks that would otherwise be undertaken by the public sector. However, PPP arrangements can also involve private sector financing for projects that would otherwise be fully financed by the public authority.

These types of PPP arrangements are particularly attractive for the public authority as they afford all the implementation and operation and maintenance efficiencies described above, together with the private investment. Access to additional sources of capital allows public authority to implement important projects sooner by avoiding the need to wait for future government budget cycles for funding. These agreements enable a private investment

partner to finance, construct, and operate revenue generating infrastructure improvement in exchange for the right to collect the associated revenues for a specified period of time.

Such partnership can be structured for the construction of a new asset or for the modernization, upgrade, or expansion of an existing facility (OMDA model, i.e., lease with developmental rights). Such concessions often extend for a period of 30 years, or even longer. Under this approach the ownership of all assets, both existing and new, remains with the public sector (DBFOT Model). It is private party's responsibility to ensure that the assets are properly used and maintained during the concession period and that they are returned in good condition when it is over. However, in certain cases the ownership of the assets may be retained with the private party (DBFOO model). Such projects are generally awarded based on different criteria like:

- o The end price offered to users (user fee or tariff).
- o The level of financial support required from the government (VGF).
- o Upfront or recurring revenue sharing with the government (premium).
- o Payment by the government for providing infrastructure facilities and services (availability payment, fixed charges, etc.).

The pros and cons of the Partnership Project Development and Investment Opportunities models are as follows:

Pros

- o Private sector bears larger share of the risks.
- o Highest level of private participation.
- o Potential for efficiency gains and innovation is very high.
- o No or limited direct financial liability of the government.

Cons:

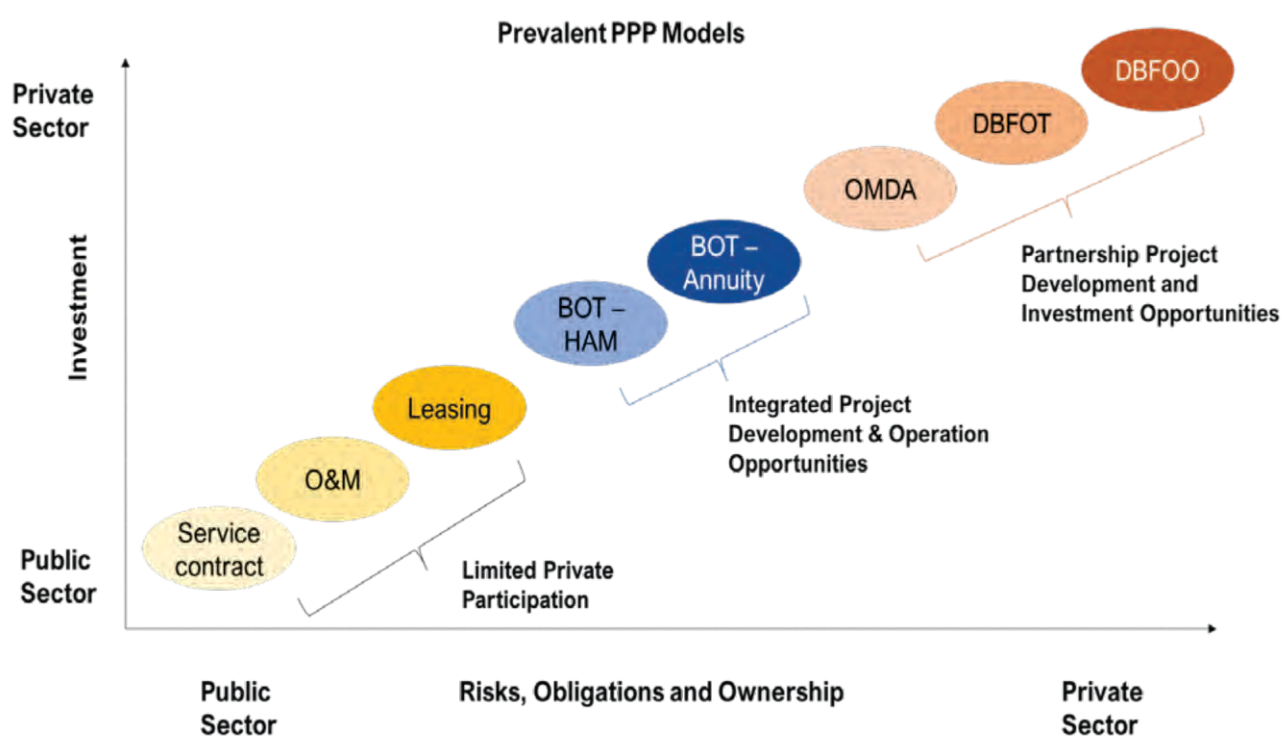
- o Highly complex to implement and administer.
- o Project structuring and bidding may require long time.
- o Difficult to implement in an untested PPP market.
- o May require close regulatory oversight.
- o Contingent liabilities on the government in the medium and long term.

The diagram and table given below show various structures of PPP partnership process with allied responsibilities:

Table 2: Type of PPP Modes:

Some of the prevalent PPP models along with associated activity, risks, and concession period.

Type	Sub Type	Main Activity	Ownership Risk	Design/ Construction risk	Finance risk	Operation risk	Indicative Concession period (years)
Limited Private Participation	Service Contract	Performing specific work assigned	Public	Public	Public	Private	Few months to few years
	O&M Contracts	Operation and Maintenance	Public	Public	Public	Private	3 to 5
	Lease	Operation and Maintenance	Public	Public	Shared	Private	5-15
Integrated Project Development and Operation Opportunities	BOT-Annuity	Build, Operate and Transfer	Public	Private	Public	Private	15-20
	BOT-HAM		Public	Private	Public	Private	15-20
Partnership Project Development and Investment Opportunities	OMDA	O&M plus Development/ Expansion	Public	Shared	Shared	Private	30-50
	DBFOT	Design, Build, Finance Operate and Transfer	Public	Private	Private	Private	30-45
	DBFOO	Design, Build, Finance Operate and Own	Private	Private	Private	Private	30-45

Figure 4: Categorization of PPP Models

Thus, there is, therefore, no generic 'one size fits all' or 'best' PPP model.

Chapter 4

Project Implementation Mode Selection - Principles

4.1. What is Project Implementation Mode Selection?

Project Implementation Mode Selection is the decision of the Project Sponsoring Authority to select the most appropriate project structure for an infrastructure project, aimed at enhancing the overall ability of the project to succeed and remain feasible during the construction and O&M period, and at the same time ensuring optimum risk allocation. The PIM of the project is one of the basic decisions taken after the project identification and shapes the future of the project.

4.2. Why Project Implementation Mode Selection is important?

Once the PSA has identified an infrastructure project to be implemented, the first decision point that appears is to select the implementation mode for that project. Whether the project shall be taken up by the public entity with public financing? Or the project shall be taken up on PPP model with private sector participation?

Due to the high infrastructure investment requirement, infrastructure development for any PSA will necessitate inflow of private investment in addition to the public investment, thereby increasing the need for more PPP projects. However, the needs of the projects are varied and suffer from various challenges like location, market appetite, risks, and viability, etc. To meet out these challenges in most appropriate manner, a variety of project structures are available and can be innovatively structured as per need, thus adding to the options available for project implementation mode.

In addition, PPP projects themselves are complex in nature. The high initial investments, transfer of public assets to the private sector partner for a concession period, the need to balance the divergent interests needs and risks of the stakeholders, etc., make designing and managing a PPP arrangement difficult. Given the high level of unpredictability involved in PPPs, PSAs need to focus on balancing and offsetting different kinds of risks inherent in the project, along with promoting ways for financial viability of the project. Thus, it is important to select the mode of project implementation which is the optimal way of handling these challenges including risk allocation to the party which is best suited to handle it at the lowest cost.

Hence, the pertinent questions faced by all PSAs are whether to take an infrastructure project in traditional procurement mode with public expenditure or to take in PPP mode with private investment; and if a project is to be undertaken on PPP mode then which PPP model is the most appropriate implementation mode that not only ensures optimal risk allocation in the context of

that particular project, but also enhances the overall ability of the project to succeed and remain feasible during the construction and O&M period.

Therefore, executing an infrastructure project makes sense if the project implementation mode itself is sound. PPP projects run for a long duration, with capital tied up as debt from banks/financial institutions/multilateral agencies. Not selecting the appropriate project implementation mode could cause projects to fail – making capital and efforts go unproductive. Also, increasing failure of PPP projects tends to dampen private sectors' confidence and thus hamper private investments in infrastructure sectors. Thus, developing capacity and knowledge base for selecting the appropriate project implementation mode becomes paramount to ensure success of infrastructure projects including PPPs.

Deciding the PIM for a project involves seeking answers to a fundamental set of questions about the project:

- Which is the most appropriate PIM for the infrastructure project under consideration?
- Can the identified PIM be improved with any upgradation mechanism for more appropriate risk sharing and enhanced private participation?
- Whether the selected PIM helps in achieving the project objectives in an efficient manner?
- Whether identified PIM helps the project to succeed and remain feasible during the construction and O&M period?

4.3. When to Select the Project Implementation Mode?

Deciding the project implementation mode is one of the most important decisions the PSA makes in the infrastructure project development process because it commits the PSA to a project implementation mode that shapes the resources requirement (both internal and external; public or private, etc.), the structure of the contract and ultimately impacts the success of the project. In addition, it indicates to the relevant stakeholders (including infrastructure developers and investors) the PSA's intention to invite their participation in the infrastructure project development in a particular manner. It may be noted that this Reference Guide doesn't deal with the question of whether the project should be taken up or not? The Waterfall Framework is applicable after the decision to undertake a project has been made by the PSA.

Infrastructure projects demand and necessitate a sound preparation to deliver a timely, effective, and cost-efficient outcome. A significant part of this preparation is done in the Project Identification (pre-feasibility) Phase and Feasibility Assessment Phase. Infrastructure projects involve conducting a series of pre-feasibility and feasibility exercises that helps the PSA to take a decision to approve, cancel, or revisit the project before subsequent bidding and signing of contract. Given the complexity of implementation of infrastructure projects, especially PPPs,

selection of PIM is advocated to be a two-step process across the two phases:

- **PIM Initial Selection** – After the infrastructure project is identified to be implemented and the project contour is defined in terms of basic understanding of the project, PIM selection is to be done at the end of the pre-feasibility stage. Thus, based upon the information available at the pre-feasibility stage, the PIM is to be initially selected.
- **PIM Final Selection** – After more firmed up information about the infrastructure project is available at the end of the feasibility stage, the initial PIM selection is again revisited to arrive at the final PIM. This firmed-up selection of the PIM is arrived at by the PSA based on the detailed feasibility analysis and after application of various project viability enhancement and risk mitigation mechanisms to upgrade the project implementation mode.

After the PIM final selection, the PSA shall start project structuring and preparation of the bid documents. However, it is important to understand that PIM selection is never a final decision in the sense that it could always be revisited and revised during the project structuring phase, and project appraisal phase of the project.

4.4. How to Select the Project Implementation Mode

Every PSA grapple with the problem of how to select an appropriate PIM for the intended infrastructure project. Whether it should go for traditional public procurement mode, limited private participation, integrated project development and operation opportunities or partnership project development and investment opportunities? And in such broad PPP categories, which PPP structure is better for the project? The suitability and effectiveness of alternative PPP structures depends on a lot of factors. Each PPP structure has strengths and weaknesses which must be recognized and applied wherever most suitable and clear benefits and advantages can be demonstrated. It is equally important that PPP structures must be adapted to sectoral and project context as desired impacts and benefits will influence PPP selection and design.

Each PIM has its own pros and cons and can be suitable for achieving the major objectives of the PSA for undertaking the project, to a varying degree. Special characteristics of some sectors and their technological development, market suitability, legal and regulatory regimes, and public and political perception about the services in a sector can also be important factors in deciding the suitability of a particular model of infrastructure development.

The selection of a suitable PPP model is a complex task and must be based on individual project characteristics and needs. Further, there is no single model that can satisfy all conditions concerning a project's locational setting and its technical and financial features. The most suitable model should be selected taking into account the size and scope of the project, financial and technical requirements, demand potential, the ability to apply user charges, risk transfer possibility, political, legal and sociocultural considerations, maturity of the PPP market, etc.

For example, PPPs may be successful in projects with substantial project size, high demand potential and possibility of applying user charges while projects with smaller project size may not attract sufficient investment traction and commitment for long operational period, unless such projects are bundled together into a larger project with a significant operating element.

It further appears that:

- PPPs are required in sectors where there is a **significant increase in the burden of traditional public sector responsibilities**. For example, regarding the disposal of municipal waste, public authorities are reducing their reliance on landfill (which has been the traditional means of disposing of waste) for economic and environmental reasons. New methods of waste disposal being adopted, such as waste to energy schemes and recycling plants, require substantial investment and specialised technical know-how which can be addressed by selecting the appropriate PPP model.
- Assessment of **information asymmetry** is essential for selection of the PIM. For example, the construction of optical fibre network under PPP arrangements is likely to be linked to the level of information available on the extent, composition, and performance of existing networks. If information is not sufficient then traditional procurement arrangements may be more suitable.
- **Understanding the complexity of the project** is essential for selection of the PIM. For example, Water supply and wastewater facilities are less suited to traditional design and build by the public authority with O&M by the private party as the private sector would retain the risks associated with operating increasingly complex treatment processes, without having had a role in the design of those processes.
- **Lease** contracts are suitable for brownfield assets with clear and separate revenue streams without needing substantial investment at initial stage by the private party. In such cases, the public sector handovers post COD functional de-risked revenue generating assets to the private sector for operation, maintenance, and tolling rights in lieu of upfront or deferred/periodic premium or share in revenue. This model has been successfully adopted for six functional airports, TOT for road projects, etc.
- **BOT** and its variant contracts (Annuity, HAM, Availability Payments, Fixed Charges, etc.) are more suitable where substantial risk is associated with demand, i.e., demand is erratic and based on too many potent variables and the private sector is unwilling to take financing risk or will take financing risk at a very high cost due to demand uncertainty. In such cases, the public sector may finance the project and accept the risk associated with demand/revenue risk, assuring that the private sector will receive annuity payment irrespective of actual usage of the infrastructure. The main benefits of such an arrangement for the public are the design, construction, operation & maintenance efficiency gains, assured uptime/availability of the asset and application

of lifecycle approach for the infrastructure asset development. This model has been most successfully deployed for road projects where traffic cannot be predicted with reasonable assurance; food grain silo projects where the utilisation of storage space depends on the cyclical agricultural produce and variable consumption patterns, etc.

- **Shadow toll DBFOT** contracts are likely to be more suitable where the private sector is ready to accept the risk associated with demand, but the PSA is not willing to impose user charges or where it is impractical to collect user charges even if imposed. This situation is possible where the users of the infrastructure assets can be ascertained with some certainty or imposing user charges on the actual users is either not desired or possible. For example, Solid Waste processing Plants are particularly suited for shadow toll which is now being widely applied where the user charges are collected by the concessionaire from the municipalities in form of tipping fees rather than the actual waste producer.
- **DBFOT** contracts are more suitable for the project with high and certain demand potential and possibility of applying user charges so that the project may be funded substantially or in fully by user charges. Under this mode, the public sector decides to transfer responsibility of collecting user charges and the finance and demand risk to the private sector. This mode is being used in sectors such as Highways, Bridges, Ports, Airports, etc.

Chapter 5

Project Implementation Mode Selection - Waterfall Framework

The PIM – Waterfall Framework is the practical application of the theory of infrastructure project implementation mode selection discussed so far. It requires application of theory and knowledge in the context of accumulated experience of the sector with a vision for the future development requirements. In this sense, it becomes an art as well as science of selecting the most appropriate mode for implementing an infrastructure project. As deliberated in the previous chapters, the decision to select a PIM for a particular project depends on several critical factors and an inappropriate PIM can lead to catastrophic failure of the project. This Reference Guide comes to the aid of the PSAs in this regard.

As a prelude to the Waterfall Framework, the table below summarizes the ability of the PPP structures to meet a range of desirable performance indicators. The various PPP structures are arrayed in increasing order of private participation from top to bottom in the table. It can be seen that as private sector participation increases, so does the potential for achieving a wide variety of infrastructure goals. However, it also needs to be recognized that greater private sector participation in infrastructure development also brings with it increased implementation constraints, particularly when private investment is involved.

Table 3: Project Implementation Modes – Comparative Analysis

	Improved service	Enhanced Operational Efficiency	Enhanced Risk Sharing	Life Cycle Costing	Accelerated Implementation	Leveraging Public Funding	Implementation Constraints
Traditional Procurement							
EPC, Turn Key, etc.	No	No	No	No	Possible	No	Low
Limited Private Participation							
Service Contracts	Yes	Possible	No	No	No	No	Low
Management Contracts	Yes	Yes	No	No	No	No	Moderate
Leasing	Yes	Yes	Some	Possible	No	No	Moderate
Integrated Project Development and Operation Opportunities							
BOT (Annuity) BOT (HAM) Availability Payment, Fixed Charges, etc.	Yes	Yes	Some	Yes	Yes	Some	High
Partnership Project Development and Operation Opportunities							
OMDA	Yes	Yes	some	Yes	No	Yes	Low
DBFOT	Yes	Yes	Yes	Yes	Yes	Yes	Very High
DBFOO	Yes	Yes	Yes	Yes	Yes	Yes	Very High

Waterfall Framework

The Waterfall Framework identifies **Seven** potent criteria, which embody the most critical aspects of project structuring and ultimately impact its success. These criteria are pertinent aspects of the overall project environment on which depends the decision of selection of the project implementation mode. These criteria are arranged in a waterfall mechanism moving from one to many and the inter-play of these criteria result in *nine* distinct scenarios of indicative project implementation modes. Thus, the Waterfall Framework is a heat map of the inter-play of the probable responses to the identified criteria, which will indicate the appropriate PIM. The PSA may continue exploring the various scenarios by moving down the Waterfall, basis the response to each criteria and accordingly derive the PIM indicated by this waterfall framework.

The critical Seven criteria of this waterfall framework are discussed as follows:

5.1. Life Cycle Approach (LCA)

The LCA is an important aspect of an infrastructure project. LCA is the approach in which the infrastructure project is seen not merely as a creation of an asset but as providing infrastructure services for a substantial period of time (at least 5-10 years or more). In LCA, the focus of undertaking an infrastructure project is not just construction but seamless and efficient operation and maintenance of the infrastructure asset as well. The main factor impacting the LCA is the size and operational revenue of the project attracting long term commitment of the private party or not?

5.2. Demand Certainty –

Demand Certainty means if the usage of the infrastructure assets can be predicted with reasonable assurance. Erratic demand and unpredictability of usage usually exist when the variables affecting demand are too many and potent, such as rapid technological changes, asset usage dependent on geographical or climatic conditions or complementary future developments, etc. Demand Certainty plays an important role in the selection of project implementation mode as the private sector may not be keen to invest in projects lacking demand certainty.

5.3. User Charge–

Every infrastructure project, irrespective of whether it is a traditional public procurement or a PPP procurement or a pure private project, has to be funded by either the users or the PSA. It could be a user funded project if it is funded directly by the user charges, it could be a taxpayer's funded project if it is funded from budgetary support, or it could be future generation funded project if it is funded by debt taken by the government to be paid by future generation of taxpayers. Further, the project could also be funded by a combination of these three funding mechanisms. However, user charges can only be applied if it is possible to accurately identify the users and it is feasible and

acceptable to impose reasonable user charges. India of Amrut Kaal aspires that infrastructure projects shall be more and more funded by the users through user charges to the extent possible.

5.4. Project Complexity –

Infrastructure projects are complex due to several features like size, impact, location, technology, political uncertainties, jurisdictional issues (inter-state), long gestation period, requirement to liaison with exceptional number of stakeholders and government authorities, etc. and clearances. There may be a case where there may be a perceived lack of maturity, non-availability or unwillingness of the private sector for the project. Sometimes, the project itself may be too large and complex and may not be manageable for the private sector. However, the PSA's perception of the complexity of the project making it unmanageable for the private sector or no traction in the market should be based on real market inputs. It should also take into consideration that the market becomes mature only by getting more and more opportunities to perform rather than debarring private sector from participation.

5.5. Asset Ownership –

The PSA has to take a decision about who will own the infrastructure assets. In other words, whether it wants the infrastructure asset to return to it at the end of the concession period or not? This decision is generally dependent on who should provide the land for the project. If the land requirement is huge or the importance of location or alignment is paramount, the government is better equipped to provide the land. Whereas, if the land requirement is small and land alignment or location is inconsequential to the success of the project or land could be more efficiently procured by the private partner, the land may be provided by the private partner. If the land is provided by the private partner, asset ownership may be retained by the private partner. Nevertheless, there could be rationale of asset ownership by the private party in cases where the land is provided by the government, for example, where no economic life of the asset remains at the close of the concession, where additional obligations associated with the disposal of the assets, where due to rapid technology changes utility of the asset is going to be diminished, etc.

5.6. Information asymmetry –

Information asymmetry is one of the conditions of failure of any free market. When complete project information is not available in the market then the market players may react very cautiously and may demand high risk premium. It will ultimately result in either failed bids or higher cost of project implementation. For example, the construction of water supply or wastewater networks under PPP arrangements is likely to be linked to the level of information available on the extent, composition, and performance of existing networks. If information is not sufficiently available, then traditional procurement arrangements may be more suitable.

5.7. Project Viability–

The return on investment of the project from the user charges is extremely critical for the private party to take the financing risk. The viability of the project gives an insight whether the return expectation of the private partner from the project shall be fulfilled or not? The project viability is generally gauged from the Project Internal Rate of Return (PIRR). Hence, the PSA needs to carefully calibrate the project revenues and the market expectations to achieve the best fit. For the purpose of preliminary assessment of the viability of the project for PIM selection, only farebox revenues may be considered. Farebox revenues include revenue collected from the users of the infrastructure assets and do not include any revenues from associated/attached or unattached activities. It is desirable for a project to have revenue stream from its own sources as it puts the project in a self-sustainable mode. However, a project may have revenue challenges from end user due to lack of excludability or due to government policy to provide the services for free or at subsidised rates.

Table 4: Waterfall Framework

Criteria	Criteria							
	1.	2.	3.	4.	5.	6.	7.	8.
Interplay of Criteria	LCA	Demand Certainty	User Charges	Project Complexity	Asset ownership	Information Asymmetry	Project Viability	Suggested Mode
i.	No							Traditional Public Procurement
ii.	Yes	No						BOT and its variants
iii.	Yes	Yes	No					BOT and its variants
iv.	Yes	No	Yes					BOT and its variants
v.	Yes	Yes	Yes	Not manageable for private sector				Traditional Public Procurement
vi.	Yes	Yes	Yes	Manageable for private sector	Private			DBFOO
vii.	Yes	Yes	Yes	Manageable for private sector	Public	Yes		Traditional Public procurement
viii.	Yes	Yes	Yes	Manageable for private sector	Public	No	No	BOT and its variants
ix.	Yes	Yes	Yes	Manageable for private sector	Public	No	Yes	DBFOT

Chapter 6

Project Implementation Mode Selection-Upgradation Mechanisms

Every infrastructure project, irrespective of whether it is a traditional public procurement or a PPP procurement or a pure private project, has to be funded by either by the users or the PSA. It could be a user funded project if it is funded directly by the user charges, it could be a taxpayer's funded project if it is funded from budgetary support, or it could be future generation funded project if it is funded by debt taken by the government to be paid by future generation of taxpayers. Further, the project could also be funded by a combination of these three funding mechanisms. However, user charges can only be applied if it is possible to accurately identify the users and it is feasible and acceptable to impose reasonable user charges. India of Amrut Kaal shall aspire that infrastructure projects shall be more and more funded by the users through user charges to the extent possible.

The PIM as initially determined through the waterfall mechanism may further be subjected to certain support mechanisms for upgradation of the PIM towards those forms of project structures which are less dependent on taxpayers funding or future generation funding and more dependent on user charge funding with higher risk taking by the private sector.

This could be undertaken through a system of support and incentives targeting the particular criteria of the waterfall mechanism which makes a less private sector involvement-based PIM more amenable for the infrastructure project. The Project Implementation Mode Upgradation Mechanisms discussed hereunder are only an illustrative list and the PSA can utilise any other innovative mechanism or a combination hereof as per the requirements of the project. Further, the Project Implementation Mode Upgradation Mechanisms are not listed in any particular order and hence need not necessarily be explored in that order. Lastly, a project is an organic whole and hence, the impact of these PIM Upgradation Mechanisms may be far reaching with cascading impact on other aspects as well. However, for the purpose of current assessment, only the areas of major impacts of the upgradation mechanisms have been indicated.

Table 5: Project Implementation Mode Upgradation Mechanisms

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
1.	Bundling of projects	• Life-Cycle Approach	Finance Risk	<ul style="list-style-type: none"> Projects with limited capex may be bundled to sizeable capex to attract long term commitment of private sector. Increase in size and O&M component of the project supports application of LCA leading to increased market appetite for the project. 	<ul style="list-style-type: none"> No direct impact on individual project viability, however, by clubbing of smaller projects into sizeable bundles, the overall project viability tends to improve by mitigating project and location related demand and revenue risk. Possibility of cross subsidisation. 	Traditional procurement modes may be upgraded to PPP modes subject to fulfilling of other waterfall criteria.	<ul style="list-style-type: none"> Single point of failure – failure of one bundle may fail many projects. Some additional complexity in structuring of projects, especially in CoD, termination of payment, change of scope, etc.
2.	Minimum Revenue Guarantee	• Demand Certainty	Finance Risk	<ul style="list-style-type: none"> Percentage of revenues guaranteed by the PSA. If the actual revenues fall below the guaranteed percentage, then PSA reimburses to that extent. Amount is disbursed as a grant and not recovered. 	<ul style="list-style-type: none"> Increases private investor's appetite as partial revenue risk is eliminated. Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. Increases project viability with low-risk premium and low cost of capital. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> Exposes the PSA to contingent liability over the concession period. Assessment of revenue shortfall has its own challenges.

⁵ Refer Para 3.2 of Chapter 3 – Undertaking PPPs of this Reference Guide

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
3.	Revenue Shortfall Loan	• Demand Certainty	Finance Risk	<ul style="list-style-type: none"> • Percentage of revenues guaranteed by the PSA. • If the actual revenues fall below the guaranteed percentage, then PSA chips into that extent. • Amount is disbursed as a loan with or without interest, to be repaid over a period of time. 	<ul style="list-style-type: none"> • Increases private investor's appetite as parial revenue risk is eliminated. • Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. • Increases project viability with low-risk premium and low cost of capital. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> • Exposes the PSA to coningent liability over the concession period. • However, it is to be repaid to the PSA by the concessionaire. • Assessment of revenue shortfall has its own challenges.
4.	Flexible Contract Term	<ul style="list-style-type: none"> • Demand Certainty • Project Viability 	Finance Risk	<ul style="list-style-type: none"> • Variation in the tenure of the concession period due to variance of actual traꞑc vis -à-vis projected traꞑc. • If the actual traꞑc > projected traꞑc, then concession period is proportionately reduced and vice versa. • Provision to cap concession period variaion in concession period. 	<ul style="list-style-type: none"> • Increases private investor's appetite as parial revenue risk is eliminated. • Increases project viability with low-risk premium and healthy return on equity. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> • Exposes the PSA to uncertainty of the project life. • Assessment of revenue gain or shortfall has its challenges. • However, there is no inancial payout by the PSA. • PSA may also gain from beter performance of the asset.

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
5.	Non-Compete Clause	<ul style="list-style-type: none"> • Demand Certainty 	Finance Risk	<ul style="list-style-type: none"> • The PSA provides an assurance to the concessionaire that it will not develop a competing infrastructure facility within the vicinity of the project till the threshold level of usage of the project is achieved. • The clause is usually provided in a project requiring high capital investment with exposure to high competition on development of similar infrastructure in a certain region around the project. 	<ul style="list-style-type: none"> • Assures Revenue potential to the investors particularly in high turnaround infrastructure such as roads and ports. • Ensures low or no competition during the project life reducing uncertainty in traffic. • Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. • Increases project viability with low-risk premium and low cost of capital. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> • Determination of actual usage breaching the threshold usage has its challenges as it would be in the interest of the concessionaire to keep actual usage within the threshold usage.
6.	Deined periodic Fare Revision Mechanism	<ul style="list-style-type: none"> • User Charges Application • Project viability 	<ul style="list-style-type: none"> • Finance Risk • Operation Risk 	<ul style="list-style-type: none"> • Assures the concessionaire of automatic revision of user charges on a periodic basis in accordance with a predefined formula. • Helps in meeting the inflation in O&M costs of the project over its lifetime. 	<ul style="list-style-type: none"> • Improves the project viability by inflation impact mitigation. • Improves the project viability with improved visibility of revenue streams. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> • PSA may be required to manage the user perception for periodic revision of user charges.

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
7.	VGF – CAPEX and/or OPEX support	<ul style="list-style-type: none"> User Charges Application Project viability 	<ul style="list-style-type: none"> Finance Risk Operation Risk 	<ul style="list-style-type: none"> VGF can be given as Capex and/or Opex grant to economically desired but commercially unviable project. May be resorted to when using other mechanisms is not practical or are unable to bring the required project viability. 	<ul style="list-style-type: none"> Improves Project Viability with reduced private capex and/or Opex requirement. Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. 	Traditional procurement, BOT and its variants may be upgraded to DBFOT or DBFOO.	<ul style="list-style-type: none"> Necessitates due diligence on the part of PSA for structuring the project. Shall require pre-fixed tariff and VGF as the bidding parameter. May require arrangement of funds if VGF is to be provided to the project by the PSA.
8.	Unbundling of project components	<ul style="list-style-type: none"> Project Complexity 	<ul style="list-style-type: none"> Design construction Risk Operational Risk 	<ul style="list-style-type: none"> Complex or unmanageable private sector components of a project are severed and taken up on traditional procurement mode. This results in insulating the project from spill over risks. 	<ul style="list-style-type: none"> By addressing project complexity, the project viability is improved which ultimately results in lower cost of capital for the project, thus improving project viability. 	By addressing Project Complexity, the PSA may upgrade to higher PIMs, subject to the other Waterfall Criteria.	<ul style="list-style-type: none"> PSA's perception of the complexity of the project making it unmanageable for the private sector or limited traction in the market, should be based on real market inputs. Market becomes mature only by getting more and more opportunities to perform rather than debarring private sector from participation.
9.	Upfront provision of approvals/clearances – SPV model	<ul style="list-style-type: none"> Project Complexity 	<ul style="list-style-type: none"> Design construction Risk Operation Risk 	<ul style="list-style-type: none"> In case the project complexity stems from multitude of approvals/clearances required from unmanageable number of agencies and jurisdictions, then the PSA may consider obtaining all approvals/ 			

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
				clearances upfront into a SPV formed for the project and upfront transferring to the successful bidder.			
10.	Upfront informaion disclosure	<ul style="list-style-type: none"> • Informaion Asymmetry 	<ul style="list-style-type: none"> • Design construction Risk • Operaion Risk 	<ul style="list-style-type: none"> • There shall be no informaion gap in the details provided by the PSA, especially about the existing assets infrastructure assets status, etc. • Eforts like stakeholder 's consultaions, etc., shall be made to identify informaion gaps and providing additional required informaion . 	<ul style="list-style-type: none"> • By addressing informaion asymmetry, the high-risk premium may be reduced resulting into improved project viability and biddability. 	<ul style="list-style-type: none"> • By addressing Informaion Asymmetry, the PSA may be able to upgrade to higher PIMs, subject to the other Waterfall Criteria. 	<ul style="list-style-type: none"> • The PSA is required to arrange requisite informaion and disseminate the same to the market in an appropriate manner. • This involves substantial preparaion with additional studies, surveys by the PSA.
11.	Government Debt	<ul style="list-style-type: none"> • Project viability 	Finance Risk	<ul style="list-style-type: none"> • The PSA undertakes to provide a porion of the project capex as debt. • Government debt instrument is oten in a form of mezzanine loan which gives cushion to the senior lenders. • Fulils marginal inancing gap for projects struggling for required level of inancing. 	<ul style="list-style-type: none"> • Credit enhancement for the project thus atracing more private capital at reduced cost of capital. • Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. • Increases project viability with low-risk 	<ul style="list-style-type: none"> • BOT and its variants may be upgraded to DBFOT or DBFOO. 	<ul style="list-style-type: none"> • Providing debt requires arrangement of funds and budgetary provision by the PSA.

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
12.	First Guarantee Loss	Project viability	Finance Risk	<ul style="list-style-type: none"> The PSA provides a guarantee to the lenders of the project to bear and recoup the loss in a project upon liquidation, upto a specified percentage, in the first instance. The investors and lenders would be required to bear the loss only if it exceeds the first loss guarantee of the PSA. 	<p>premium and low cost of capital.</p> <ul style="list-style-type: none"> Credit enhancement for the project thus attracting more private capital at reduced cost of capital. Increases private investor's appetite as partial revenue risk is eliminated. Provides assurance to the lenders which may reduce the risk premium of funds thus bringing down cost of capital. Increases project viability with low-risk premium and low cost of capital. 	BOT and its variants may be upgraded to DBFOT or DBFOO.	Exposes the PSA to higher contingent liability over the project life.
13.	Counter Party Contracts	Project viability	<ul style="list-style-type: none"> Design / Construction Risk Finance Risk Operation Risk 	<ul style="list-style-type: none"> Rare events, leave a huge impact on the project and its revenue. The risk is subdued by counterparty contracts as a second line of defence. Share and safeguard the exposure of 		Traditional Procurement projects can be taken up in BOT or DBFOT/ DBFOO modes.	Exposes PSA to additional contingent liability during the concession period.

Sl. No.	Support Mechanism	Target Waterfall Criteria	Cardinal Risk ⁵ Sought to be mitigated	Salient Features	Impact on project viability	Impact on PIM	Considerations for the PSA
14.	<ul style="list-style-type: none"> Allow non-farebox revenue 	<ul style="list-style-type: none"> Project viability 	<ul style="list-style-type: none"> Finance Risk Operation Risk 	<p>investors broadly to the following risks –Change in scope, Change in law, Force majeure, Compensation for breach of agreement (by authority), Termination, etc.</p> <ul style="list-style-type: none"> The counterparty contract also safeguards the interest of lenders on the occurrence of rare events. 	<ul style="list-style-type: none"> Clubbing non-farebox revenue sources enhances the viability of the project. It also allows the concessionaire to bring more private efficiency and investment. 	<p>Traditional Procurement projects can be taken up in BOT or DBFOT/ DBFOO modes.</p>	<p>PSA may need to forego potential revenues from the non-farebox revenue sources.</p>

Annexure I:**PIM Memo**

Sl. No.	Particulars	Response
1.	Indicated PIM as per the Reference Guide on Project Implementation Mode Selection - Waterfall Framework ?	
2.	Has PSA used any PIM upgradation mechanism?	Yes/No
3.	If yes, then indicate which PIM upgradation mechanism used?	
4.	Indicated PIM after using PIM upgradation mechanism	
5.	PIM selected by the PSA	
6.	If it is different than what is indicated in sr. no. 4 (above), then reasons thereof	

Annexure II:

Key Initiatives of IFS, DEA to strengthen the PPP Ecosystem

Department of Economic Affairs (DEA) has laid greater thrust on improving infrastructure development in the country by encouraging private sector participation in building adequate and quality infrastructure.

Over the past decade, DEA has been actively engaged in developing the appropriate policy framework for encouraging PPPs in infrastructure development. Public Private Partnerships (PPPs) are being encouraged for execution as well as operation and maintenance of infrastructure assets. Besides, new schemes, measures and initiatives are being introduced to provide financial and technical support to the private sector wherever necessary.

Some of the key initiatives/measures undertaken/being undertaken by the Department for improving the development and implementation of PPP projects are elaborated below:

1. **Empanelment of Transaction Advisers:** The DEA has empaneled 12 TAs in order to create an enabling environment for stepping up private investment in Infrastructure and to cater state governments and its agencies demand for an enabling framework to eliminate delays in appointment of transaction advisors/consultants for preparing a shelf of bankable projects. This TA panel is made available to all Central Ministries, state governments, Statutory Bodies, Public Sector Enterprises (“PSE”) and other such undertakings within the purview of Ministries/ Departments of government of India and state governments intending to undertake PPP transactions.

The Panel will help to make the process of appointment of transaction advisors/consultant:

- **Effortless:** By streamlining the tendering process for the engagement of transaction advisors for PPPs.
- **Efficient:** By enabling fast access to firms that have been pre-qualified against relevant criteria.
- **Effective:** By ensuring transparency and accountability through clear definition of the processes, role and responsibilities of the agencies and the private sector, leading to preparation of bankable PPP projects.

Further, to support and guide the Central, state, and Local government level, Project Sponsoring Authorities to effectively utilize the services of the empaneled TAs in an efficient & time bound manner to save upon the time of the PSA, DEA has developed a **Manual on Transaction Advisers for PPP projects** for the use of the panel. This manual is a step-by-step guide that can be referred by the project sponsoring authorities to on-board a transaction adviser from DEA empaneled TAs for their PPP project. The notified panel of Transaction Advisers for PPPs and the manual for the use of the panel is available on the website www.dea.gov.in and www.pppinindia.gov.in.

- 2. VGF Grant Support:** For providing financial support to PPP projects in Infrastructure which are economically justified but commercially unviable, the DEA, through the Viability Gap Funding (VGF) scheme, provides financial support in the form of grants, one time or deferred, to infrastructure projects undertaken through PPPs with a view to make them commercially viable.

Under the VGF scheme, economic sector projects are eligible for VGF up to 40% of the TPC. The VGF Scheme includes higher provisions of VGF grant for projects to be undertaken in social sectors i.e., Health, Education, Water Supply, Waste Water Treatment, Solid Waste Management, etc. Social sector projects are eligible for VGF up to 60% of the TPC. Further, for pilot/demonstration projects from health/education sectors, VGF of up to 80% of the TPC along with upto 50% of Opex for 5 years after Commercial Operation Date (CoD) are being provided.

The VGF Guidelines is available at www.pppinindia.gov.in.

- 3. IIPDF:** The DEA has notified the India Infrastructure Project Development Fund Scheme (IIPDF Scheme) for development of quality PPP projects by providing necessary funding support to the project sponsoring authorities, both in the Central and state governments. The objective of the scheme is creating a shelf of bankable viable PPP projects for achieving the vision of modern infrastructure for the country. It supports Project Sponsoring Authority in sourcing funding to cover the PPP transaction costs, thereby reducing the impact of costs related to procurement of TAs on their budgets.

Under the IIPDF Scheme, the cost of consultants/transaction advisors of a PPP project can now be funded up to Rs. 5 Crores per project.

Funding under the IIPDF Scheme may include the expenses incurred by the Project Sponsoring Authority in respect of feasibility studies, environment impact studies, financial structuring, legal reviews and development of project documentation, including concession agreement, commercial assessment studies (including traffic studies, demand assessment, capacity to pay assessment), grading of projects etc. required for achieving Technical Close of such projects, on individual or turnkey basis, but would not include expenses incurred by the Project Sponsoring Authority on its own staff.

The IIPDF Scheme Guidelines is available at www.pppinindia.gov.in

- 4. Development of Model RFQ/RFP for PPP Projects:** Standardized documents enable project authorities to save on the time and costs involved in structuring and awarding complex PPP projects. In addition, they afford protection to individual entities and officials against making errors. Such standard documents typically lay down the norms, principles and parameters to be followed for PPP projects and enable project authorities to adopt them with considerable ease for meeting the specific requirements of individual projects.

Also, fair and competitive selection of the private partner is of utmost importance in the entire bid process since cost and quality of service to users would depend on the performance of the private partner. In line with this objective, DEA is in process of preparing the **Model Request for Proposal (RFP)** for single stage bid process.

Once launched, the Model RFQ/RFP shall be available at www.pppinindia.gov.in

5. **PPP Procurement Manual:** To ensure that PPP procurements are made by following a systematic, efficient, and cost-effective procedure and to ensure fair and equitable treatment of bidders/ contractors, the DEA is in process of preparing procurement manual which aims to bring together at one place the step-by-step procedures for undertaking PPPs.

The proposed PPP Procurement Manual will provide understanding of PPP project development practices among Center/states and various Project Implementing Agencies. Procurement manual will provide detail on the steps for stages of Procurement, its types and selection mode, etc.

This manual for procurement embodies the best practices for PPP procurement and aims to provide a guiding document for PPP procurement.

Once launched, the PPP Procurement Manual shall be available at www.pppinindia.gov.in

6. **Model Concession Agreements for Nascent Sectors:** Model Concession Agreements form the baseline of PPP projects. It acts as a tool to spell out the desired policy, regulatory and institutional framework for a PPP project in a sector and allocate the necessary risks to the party that is best suited to manage them.

The DEA has undertaken an exercise to study the PPP landscape and make the concession agreements stronger. DEA has undertaken deep dive assessment of six sectors inter alia including Health, Education, Water, solid Waste and Sports. Draft MCAs for the solid waste management and multi sports stadium have been prepared and given to the concerned Ministries for approval as MCA.

The same are available on www.pppinindia.gov.in

7. **Project Structuring Toolkits:** PPP structuring Toolkit is a web-based resource that has been designed to improve the decision-making by the PSA and to improve the quality of the PPP projects. The DEA has revamped the PPP structuring toolkits for its alignment with the current regulations and guidelines and to make them relevant with the current developments/scenarios. It will help in improving project implementation and providing guidance during the lifecycle of the PPP projects. PPP Structuring toolkit would help the PSAs in identifying appropriate PPP variant, financial viability, risk allocation etc.

The toolkit covers five infrastructure sectors, namely:

- Roads
- Water and Sanitation
- Ports
- Solid Waste Management
- Urban Transport

The toolkits can be accessed on <https://www.pppinindia.gov.in/ppp-toolkit>

A user guide for the toolkit can be accessed at

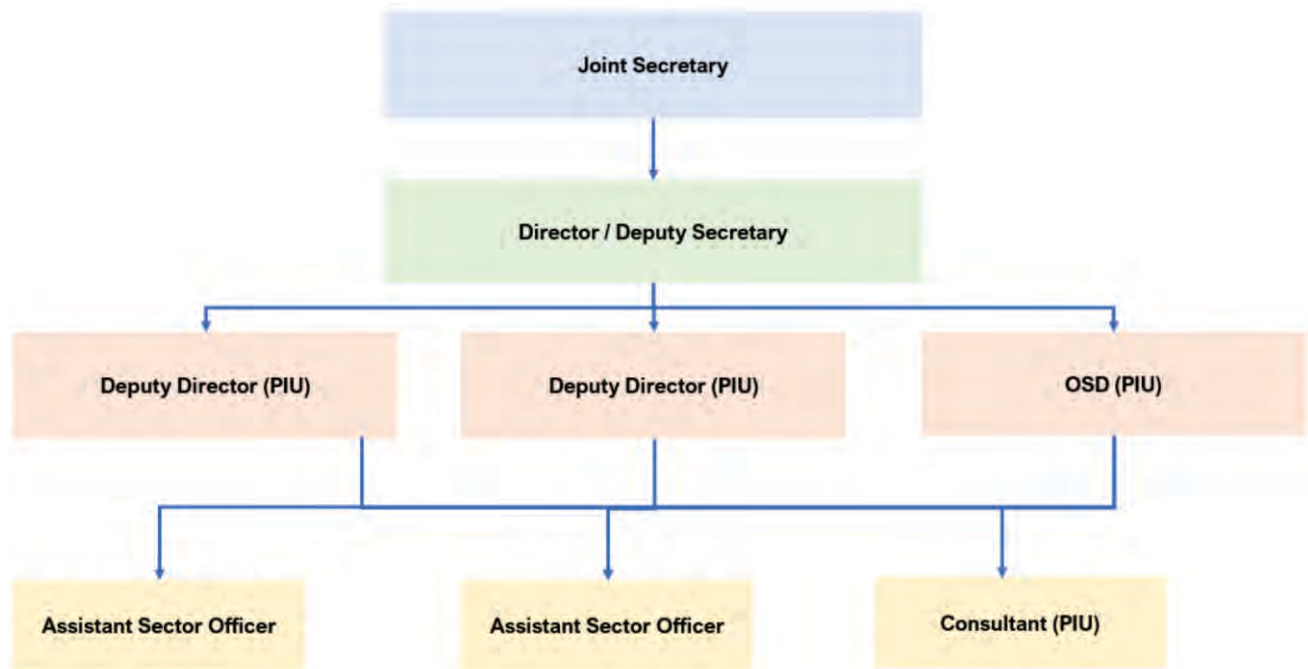
https://www.pppinindia.gov.in/toolkit/pdf/ppp_toolkit_user_guide.pdf

8. Capacity Building Initiatives: Capacity building plays a crucial role in understanding the complex PPP structuring and its nitty-gritties. Understanding this, the DEA is regularly conducting workshops, seminars, conferences for stakeholders in order to build the capacity. The DEA has engaged with Capacity Building Commission to develop a Capacity Enhancement Plan- (CEP) to address the key requirements of implementing infrastructure projects. DEA has also engaged with premier management institutes including from both public and private institutes such as Indian Institutes of Management (IIMs), Indian Institute of Technology (IITs), ISB, NITIE Mumbai, SPIJMR etc. Additionally, DEA has also identified professional bodies, organizations, institutes, and Centre of Excellence established under aegis of the Ministries such as IIBF, AJNIFM, ICAI, AIMA, etc. for conducting offline/online trainings and developing self-learning courses on infra-focused areas, creation of infrastructure-suitable compendium of knowledge resources across sectors, etc. The DEA is also in process of developing a continuous learning mechanism through digital learning modules to provide the necessary flexibility and convenience in the learning process.

9. State Outreach Programmes for State PPP Cells: To identify the challenges faced by states across various aspects of infrastructure development, state Infrastructure outreach workshops are regularly organized by the DEA with state governments. These workshops are designed to include discussions and deliberations with states on measures required to enhance project structuring, creating a self of biddable and viable projects, improving project finance with additional financing options new financing instruments. Till date, three chapters of these workshops have been conducted at Mumbai, Chandigarh, and Varanasi with participation from a total of 14 states and Union Territories (Uttar Pradesh, Bihar, Madhya Pradesh, Chattisgarh, Himachal Pradesh, Uttarakhand, Punjab, Maharashtra, Gujarat, Karnataka, Andhra Pradesh, Chandigarh, Jammu & Kashmir, and Ladakh). Under the workshop, senior officials from key central infrastructure ministries like the MoWR, MoHFW, MoHUA, DEA, etc. have participated. The primary focus of these workshops is to

discuss and resolve the bottlenecks being faced by states in developing and financing infrastructure projects as well as to enhance private investment in infrastructure.

Figure 5: Organizational Structure of PIU of ISD Division of IFS



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**Infrastructure Finance Secretariat
Department of Economic Affairs
Ministry of Finance
Government of India**