CHAPTER –2
CONCEPTUAL FRAMEWORK FOR PPP PROJECTS

2.1 Introduction

Meeting the challenges of the growing demand for new and better infrastructure services with limited resources have found partnerships with private sector as an attractive alternative to increase and improve infrastructure services in a short time. The partnership is built through a legally binding contract on the expertise of each partner that meets clearly defined public needs through the appropriate allocation of resources, risks, responsibilities and rewards. It is important to emphasize here that PPP is not a solution option to an infrastructure service problem but a viable project implementation mechanism for a preferred solution option.

2.2 Definition of PPP

According to Department of Economic Affairs, Ministry of Finance, Government of India (GOI) and Asian Development Bank, “PPP means an arrangement between a government or statutory entity or government owned entity on one side and a private sector entity on the other, for the provision of public assets and/or related services for public benefit, through investments being made by and/or management undertaken by the private sector entity for a specified time period, where there is a substantial risk sharing with the private sector and the private sector receives performance linked payments that conform (or are benchmarked) to specified, pre-determined and measurable performance standards.” Any Engineering Procurement Construction (EPC) contract asset that is not retained by the private sector after 3 years from completion of construction or any arrangement for supply
of goods or services for a period of up to three years or any arrangement or contract that only provides for a hire or rent or lease of an asset without any performance obligations and other essential features of a PPP does not come under the definition of PPP.

According to GOI, “PPP Project“ means a project based on a contract or concession agreement, between a government or statutory entity on the one side and a private sector company on the other side, for delivering an infrastructure service on payment of user charges. Here, Private Sector Company means a company in which 51% or more of the subscribed and paid-up equity is owned and controlled by a private entity.

Though, there is no single definition of PPPs, the primary aim of this cooperation broadly refers to long-term, contractual partnerships between the public and the private sector agencies, specifically targeted toward financing, designing, implementing, and operating infrastructure facilities and services that were traditionally provided by the public sector. In accordance with the Asian Development Bank (ADB) reports, effective PPPs recognize that the public and the private sectors each have certain advantages, relative to the other, in performing specific tasks. The government’s contribution to a PPP may take the form of capital for investment (available through tax revenue), a transfer of assets, or other commitments or in-kind contributions that support the partnership. The government also provides social responsibility, local knowledge, environmental awareness, and the capacity to mobilize political support. The private sector’s responsibility in the partnership is to make use of its knowledge and proficiency in commerce, management, operations, and
innovation in order to run the business more professionally and efficiently. Also, the private partner may contribute investment capital based on the form of contract.

PPP-Characteristics

- Government's role is one of facilitator and enabler by assuming social, environmental and political risks; private partner's role is one of financier, builder and operator of the service or facility and it typically assumes construction and commercial risk.
- The Government remains accountable for service quality, price certainty and cost-effectiveness (value for money) of the partnership.
- The PPP process involves a full scale risk appraisal since the private sector assumes the risk of non-performance of assets and realizes its returns if the assets perform.
- PPPs deliver efficiency gains and enhanced impact of the investments. They lead to faster implementation, reduced lifecycle costs and optimal risk allocation.
- PPP does not involve outright sale of a public service or facility to the private sector.

2.3 Types of PPP Contracts

According to Asian Development Bank (2000) and World Bank (2004) the most common partnership options used world-wide are classified as:

a. Service Contract and Management Contract
b. Turnkey contracts
c. Lease contract
d. Concession

e. Private Finance Initiative and Private ownership

Each of these five categories has many variants. A categorization of the model with main variants and characteristics is shown in Figure 2.1 and Table 2.1 below:

![Figure 2.1 Basics Feature of PPP models](image)

*Source: World Bank report on PPP projects (2004)*
Table 2.1
Different forms of PPP models

<table>
<thead>
<tr>
<th>Broad Category</th>
<th>Main Variants</th>
<th>Operation and maintenance</th>
<th>Ownership of Assets</th>
<th>Investment</th>
<th>Assumption of Risk</th>
<th>Duration (years) of contract</th>
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Source: Guidebook on PPP in infrastructure, UNESCAP

**Service Contracts and Management contracts**

A management contract is a contractual arrangement for the management of a part or whole of a public enterprise (for example, a specialized port terminal for container handling at a port or a utility or distribution and collection of electricity bills by A.P Electricity distribution) by the private sector. These contracts allow private sector skills to be brought into service design and delivery, operational control, labor management, equipment procurement and are, generally not asked to assume commercial risk. However, the public sector retains the ownership of facility and equipment. The private contractor is paid a fee to manage and operate services which is performance-based. 104 mobile health
services, 108 emergency response services also work on operation and management contract.

**Turnkey Contracts**

Turnkey is a traditional public sector procurement model for infrastructure facilities. Generally, a private contractor is selected through a bidding process. The private contractor designs and builds a facility for a fixed fee, rate or total cost, which is one of the key criteria in selecting the winning bid and assumes risks involved in the design and construction phases. The scale of investment by the private sector is generally low and for a short-term. E.g. supply, erection and commissioning of boilers, power plants, transmission lines, sub-stations etc.

**Affermage/Lease**

In this category of arrangement, the operator (the leaseholder) is responsible for operating and maintaining the infrastructure facility (that already exists) and services, but generally the operator is not required to make any large investment. However, often this model is applied in combination with other models such as build-rehabilitate-operate-transfer. In such a case, the contract period is generally much longer and the private sector is required to make significant investment. The arrangements in an affermage and a lease are very similar. The difference between them is technical. Under a lease, the operator retains revenue collected from customers/users of the facility and makes a specified lease fee payment to the contracting authority. Under an affermage, the operator and the contracting authority share revenue from customers/users. Land to be developed by the leaseholder is
usually transferred for a period of 15-30 years. E.g. Development and maintenance of municipal parks, IMAX theatres multiplex at Necklace road, Hyderabad, Rock Garden at Necklace road, Hyderabad etc.

**Concessions**

In this form of PPP, the government defines and grants specific rights to an entity (usually a private company) to build and operate a facility for a fixed period of time. The government may retain the ultimate ownership of the facility and/or right to supply the services. In concessions, payments can take place both ways: concessionaire pays to government for the concession rights and the government may pay the concessionaire, which it provides under the agreement to meet certain specific conditions. Usually, such payments by the government may be necessary to make projects commercially viable and/or reduce the level of commercial risk taken by the private sector, particularly in a developing or untested PPP market. Typical concession periods range between 5 to 50 years.

**Private Finance Initiative (PFI)**

In the private finance initiative model, the private sector remains responsible for the design, construction and operation of an infrastructure facility. In some cases, the public sector may relinquish the right of ownership of assets to the private sector. The public sector purchases infrastructure services from the private sector through a long-term agreement. PFI projects, therefore, bear direct financial obligations to the government in any event. The public sector’s main advantages lie in the relief from bearing the costs of
design and construction, the transfer of certain risks to the private sector and the promise of better project design, construction and operation.

Types of Build Operate and Transfer Models (BOT) in a Concession Model:

Build Own Operate (BOO)
The government grants the right to finance, design, build, operate and maintain a project to a private entity, which retains ownership of the project. The private entity is not required to transfer the facility back to the government. Jawaharlal Nehru Pharma City, an SEZ is on BOO model costing 313.33 crores and is under operation.

Build Operate Transfer (BOT)
The private business builds and operates the public facility for a significant time period. At the end of the time period, the facility ownership transfers to the public. Most of the road projects are awarded on BOT basis e.g. part of Hyderabad ORR project.

Build-Own-Operate-Transfer (BOOT)
The government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period of time. Ownership of the facility is transferred back to the public sector at the end of that period. Example: Rajiv Gandhi International Airport at Hyderabad is under a BOOT type of contract and is under operation since 2008, Hitec City, Hyderabad.
**Design Build-Operate (DBO)**

A single contract is awarded to a private business which designs, builds, and operates the public facility, but the public retains legal ownership.

**Build-Develop-Operate (BDO)**

The private business buys the public facility, refurbishes it with its own resources, and then operates it through a government contract. Development of world class theme park at Nagarjunasagar on BDO model costing around 100 cr in under inception and Indira Gandhi Zoological Park at Vishakhapatnam is under operation.

**Build-Own-Lease-Transfer (BOLT)**

The government grants the right to finance and build a project which is then leased back to the government for an agreed term and fee. The facility is operated by the government. At the end of the agreed tenure the project is transferred to the government. E.g. Food court near necklace road is on this model.

**Develop Operate and Transfer (DOT)**

DOT can be said to be a contractual arrangement whereby favorable conditions external to the new infrastructure project which is to be built by a private developer are integrated into the arrangement by giving that entity the right to develop adjoining property, and thus, enjoy some of the benefits created by the investment such as higher property or rent values.
Rehabilitate Operate and Transfer (ROT)

ROT can be said to be a contractual arrangement whereby an existing facility is turned over to a private entity to refurbish, operate and maintain for a specific period as a franchisee, on the expiry of which, the legal title to the facility is turned over to the government. Leasing of “VUDA” guest house for a health or spa at Bheemunipatnam, Visakhapatnam district is on ROT model.

Design-Build-Operate (DBO)

Under this model, the private sector design and builds a facility on the turn-key basis. Once the facility is completed, the title for the new facility is transferred to the public sector, while the private sector operates the facility for a specified period.

Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M)

Under this model, the private sector designs, builds, finances, operates and/or maintains a new facility under a long-term lease. At the end of the lease term, the facility is transferred to the public sector. In some countries, DBFO/M covers both BOO and BOOT. Example: Upgradation of Nehru Zoological Park, Bird Park at Kothaguda, Development of Intercity Bus Terminal at Miyapur, Hyderabad.

Selection of the Model

Each model has its own pros and cons and can be suitable for achieving the major objectives of PPP to a varying degree. Special characteristics of some sectors and their technological development, legal and regulatory regimes and public and political
perception about the services in a sector are important factors in deciding the suitability of a particular model of PPP. There is no single PPP model that can satisfy all conditions concerning a project’s location and its technical and financial features. For example for a new project a BOT type of model may be quite suitable in a matured PPP market while a BOO type of models may be more appropriate in a developing market. Table 2.2 shows sector wise selection of PPP model and the number of projects undertaken in India.

### Table 2.2
**Sector wise PPP Project Data in India**

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<tr>
<th>Sno</th>
<th>Sector</th>
<th>Project type</th>
<th>No of Projects</th>
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Source: Compiled from pppindiadatabase.com as on August 2013
Phases for implementation of PPP Project

Identifying, developing and implementing a project on PPP mode involves a series of steps and is put into four phases as seen in figure 2.2

Figure 2.2
Phases for implementation of PPP project

Source: User guide for developing toolkit for PPP

**Phase 1: Project identification and need analysis:** Potential PPP projects are identified on the basis of an analysis of the need for infrastructure services and the options for meeting the service are considered in terms of the need for and type of assets. Potential PPPs are then evaluated for their suitability for development as PPPs and a prefeasibility report is prepared.

**Phase II: Full Feasibility study and PPP preparation:** A potential PPP that was considered suitable in the Phase 1 analysis is studied in detail to continue to the procurement phase. Identification of risks factors for the project, value for money analysis are undertaken to establish the economic viability of the project.
Phase III: PPP procurement – the procurement process takes place, an application is made for final approval, the preferred bidder is selected and the project is taken to technical close.

Phase IV: Contract management and monitoring – the Sponsoring Authority manages the PPP throughout its life, including monitoring the private partner’s performance against the requirements of the Concession Agreement. Phase IV begins at the pre-operative stage, and spans the construction stage (where relevant), the operations stage, and contract closure and asset transfer.

2.4 Formation of a PPP project
In a PPP model the private-sector consortium forms a special company called a “Special Purpose Vehicle” (SPV) for each project, to develop, build, maintain and operate the project for the contracted period. In cases where the government has invested in the project, it is allotted (but not always) an equity share in the SPV. The consortium is usually made up of project sponsor(s), building contractor, a maintenance company and bank lender(s). SPV is the legal entity that signs the contract with the government and with subcontractors to build the facility and then maintain it. The SPV has no other assets other than the project assets. These projects are characterized by non-recourse or limited-recourse financing where lenders are repaid from only the revenue generated by the projects. (A non-recourse loan means the loans are secured by the project assets and paid entirely from the cash flow rather than from the general assets of the sponsors. A limited
recourse finance means a debt in which the creditor has limited claims on the loan in the event of default. It is in between secured bonds and unsecured loans). From the legal perspective it is the SPV that undertakes the project and therefore all contractual agreements between the various parties will be negotiated between themselves and the SPV. Figure 2.3 presents the typical model of a PPP project.

PPPs are a partnership between the public (government) and the private sector and commitment from the government is one of the key factors for the success of the PPP. If the government has contributed equity in exchange for shares in the SPV, they have equal rights and equivalent interests to the assets within the PV as other stakeholders.

The financing of a project will be made of different amounts of debt and equity, the source and structure of which will vary depending on the project. The debt financing will generally be provided by the government sponsor and equity financing is by the private sponsors, in exchange for ownership in the SPV. For debt financing, the investment needs of the project are met by the budgetary provisions.

The Viability Gap funding (VGF) Scheme of the Government of India provides financial support in the form of grants to infrastructure projects undertaken on PPP mode which is generally up to 20 per cent of the project cost. These grants are either one time or deferred basis, and are strictly restricted for the purpose of making the projects commercially viable. Government of India has also requested the World Bank to help bridge the critical shortfall in infrastructure financing. World Bank helps in increasing the availability of long-term finance for infrastructure PPP projects in India and also helps the Indian
Infrastructure Finance Corporation Limited (IIFCL) to stimulate the development of a long-term local currency debt financing market for infrastructure in India.

**Fig 2.3**
**Typical Model of a Public Private Partnership Project**

An escrow account is an account setup and managed by the SPV in order to safeguard the project revenues for the purpose of ensuring that debt service obligations are met. An escrow account can also be used to hold deposit in trust until certain conditions have been met.

*Source: UNESCAP*
2.5 Parties involved in a PPP project

There are a number of major parties to any BOT project, all of whom have particular reasons to be involved in the project. The contractual arrangements between those parties, and the allocation of risks, can be complex. The major parties to a BOT project will usually include:

1. Government Agency

A government department or statutory authority is a pivotal party. It will:

- grant to the sponsor the "concession", that is the right to build, own and operate the facility,
- grant a long term lease of or sell the site to the sponsor, and
- Often acquire most or all of the service provided by the facility.

The government's co-operation is critical in large projects. It may be required to assist in obtaining the necessary approvals, authorizations and consents for the construction and operation of the project. It may also be required to provide comfort that the agency acquiring services from the facility will be in a position to honor its financial obligations. The government agency is normally the primary party. It will initiate the project, conduct the tendering process and evaluation of tenderers, and will grant the sponsor the concession, and where necessary, the offtake agreement.
2. **Sponsor**

The sponsor is the party, usually a consortium of interested groups (typically including a construction group, an operator, a financing institution, and other various groups) which, in response to the invitation by the Government Department, prepares the proposal to construct, operate, and finance, the particular project.

The sponsor may take the form of a company, a partnership, a limited partnership, a unit trust or an unincorporated joint venture. The investors in the sponsor are often referred to as the "equity investors" or the "equity providers". The equity investment in a project is approximately 20% of the cost of the project. Equity funds are, however, expensive compared to the cost of debt. An equity investor may require a return of 20% to 25% in today's market to compensate it for assuming the major risks inherent in an infrastructure project. As a result it may be cost-efficient for equity to be much less than 20% of the project cost.

The sponsor may be a company, partnership, a limited partnership, a unit trust, an unincorporated joint venture or a combination of one or more.

3. **Construction Contractor**

The construction company may also be one of the sponsors. It will take construction and completion risks, that is, the risk of completing the project on time, within budget and to specifications. These can be sizeable risks and the lenders will wish to see a construction
company with a balance sheet of sufficient size and strength with access to capital that gives real substance to its completion guarantee.

The construction risk is then taken by the construction company. Further, depending upon the nature of the infrastructure, the commissioning risk is often allocated to the construction company. The sponsor will aim to require the construction company to enter into a fixed price fixed time construction contract. However, this is rarely fully achieved, as there are normally some costs or timing issues which are not taken by the construction company which can lead to variations in price or timing.

4. Operation and Maintenance Contractor

The operator will be expected to sign a long term contract with the sponsor for the operation and maintenance of the facility. Again the operator may also inject equity into the project. There has not been a shortage of operators, mainly from offshore, for proposed infrastructure projects. This probably has a lot to do with the fact that operators tend to accept little risk in the form of up-front capital or expenditure. An operator simply anticipates making a profit from operating the infrastructure more efficiently than an equivalent government run project.

5. Financiers

In a large project there is likely to be a syndicate of banks providing the debt funds to the sponsor. The banks will require a first security over the infrastructure created. The same or different banks will often provide a stand-by loan facility for any cost overruns not
covered by the construction contract. As the financing of BOT structure projects is a form of project finance, debt financiers will undertake a review of all core project documents to assess the allocation of risks and how that allocation impacts upon their credit approval. There has been some difficulty in attracting debt financiers to infrastructure projects, mainly because of the long term nature of the repayment of the bank debt, which may have a repayment term of up to 20 years, and the large number of infrastructure projects currently in the market place.

6. **Equity Investors**

It is always necessary to ensure that proposed investors in an infrastructure project have sufficient powers to enter into the relevant contracts and perform their obligations under those contracts. Life insurance companies and trustees of superannuation funds usually invest in equity of infrastructure projects.

7. **Other Parties**

Other parties such as insurers, equipment suppliers and engineering and design consultants etc will also be involved.

2.6 **Financing of PPP Projects**

PPP projects require, formulating a complex financial package which involves financial viability, addressing contractual agreement and risk allocation among the two parties to achieve successful financing. The technique of financing of PPPs is closely linked to “Project Finance”. The term project financing basically deals with the financing of an economic unit. The lender looks initially into the cash flows and earning of that unit as the
source of funds from which a loan will be repaid to the assets of the unit as collateral for the loan. The PPP structures are typically more complex than traditional public procurement of assets, due to the number of parties involved and particularly the mechanism to share the risks. In project finance, lenders and investors rely either exclusively “non-recourse” or mainly “limited recourse” on the cash generated by the project to repay their loans and earn a return on their investments. This is in contrast to corporate lending where lenders rely on the strength of the borrowers balance sheet for their loans. The financing structure is designed to optimize the cost of finance for the project and allocation of risks between the public and private sectors as agreed in the PPP contract. Table 2.3 below shows the various financing sources that can be tapped for devising financial packages.

Table 2.3  
Financing sources for PPP projects

<table>
<thead>
<tr>
<th>Domestic sources</th>
<th>External sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity</strong></td>
<td></td>
</tr>
<tr>
<td>• Domestic developers (independently or in collaboration with international developers)</td>
<td>• International developers (independently or in collaboration with domestic developers)</td>
</tr>
<tr>
<td>• Public utilities (taking minority holdings)</td>
<td>• Equipment suppliers (in collaboration with domestic or international developers)</td>
</tr>
<tr>
<td>• Other institutional investors (likely to be very limited)</td>
<td>• Dedicated infrastructure funds</td>
</tr>
<tr>
<td>• Other international equity investors</td>
<td>• Other international equity investors</td>
</tr>
<tr>
<td>• Multilateral agencies (International Finance Corporation, Asian Development Bank)</td>
<td></td>
</tr>
<tr>
<td><strong>Debt</strong></td>
<td></td>
</tr>
<tr>
<td>• Domestic commercial banks (3-5 years)</td>
<td>• International commercial banks (7-10 years)</td>
</tr>
<tr>
<td>• Domestic term lending institutions (7-10 years)</td>
<td>• Export credit agencies (7-10 years)</td>
</tr>
<tr>
<td>• Domestic bond markets (7-10 years)</td>
<td>• International bond markets (10-30 years)</td>
</tr>
<tr>
<td>• Specialized infrastructure financing institutions</td>
<td>• Multilateral agencies (15-20 years)</td>
</tr>
<tr>
<td></td>
<td>• Bilateral aid agencies</td>
</tr>
</tbody>
</table>

**Value for Money: VfM**

One of the main reasons that projects are procured by PPP is to enhance Value for Money by inviting the private sector to handle public works. Value for money according to the HM treasury is defined as *the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user’s requirement.*

VfM assessment should ensure that the public sector focuses on the quality of work as well as the competencies of the private party and not on the lowest bid in the project statement. VfM test compares the estimated cost of procuring the project in public sector with the estimated cost of procuring it as a PPP.

**Value for Money Assessment**

VfM in a PPP project has been assessed using different approaches in different countries. According to Grimsey and Lewis there are four different approaches that could be used to assess VfM. They are:

1. **Full Cost – Benefit Analysis:** It is very difficult approach as it involves a lot of information and assumptions in terms of costs, risks, and benefits. There is ambiguity created in determining the value for money created due to PPP. This method is mostly used in Germany.

2. **Public sector comparator (PSC):** It is the most widely used approach for VfM analysis. PSC is a hypothetical constructed benchmark to assess the value-for-money of conventionally financed procurement in comparison with a privately financed
scheme for delivering a publicly funded service. This can be essential for providing the quantitative justification for engaging in a PPP. Typically, a VfM assessment of a PSC is a simple difference of total costs associated with a private bid compared to the PSC, adjusting for transferred and retained risk. VfM analysis is used at all stages of the project life cycle. It is conducted during the strategy formulation stage when the economic viability of the project is reviewed before it is open for bidding. It is widely used in Japan, Netherlands, and South Africa. The key characteristics of a PSC are:

a. It expresses the NPV of a projected cash flow based on the specified public sector discount rate for the entire contract period

b. It is based on the most current method of public sector delivery for similar infrastructure services.

c. It includes a competitive neutrality adjustment so that there is no net financial advantage between public procurement and private ownership.

d. It assesses the value of all material costs that are reasonably expected to be retained by government if the project is delivered under PPP mode.

e. It assesses the value of all material and quantifiable risks that would be reasonably be expected to be transferred to bidders if the project is delivered in PPP mode.
3. **UK style PSC- PPP VfM test**: It is similar to PSC where comparison before bid and after bid is done of a PPP with traditional procurement so as to determine whether or not they represent VfM.

4. **Competitive Bidding**: This process is also called as “Restrictive Bidding” and is divided into two phases – Qualification phase (where interested participants qualify on the basis of pre identified financial and technical qualifications) and the financial bid phase. In India most of the PPP projects are allotted through a competitive bid process. This process promotes transparency and eliminates corruption and allows for better price discovery. The Planning Commission of India advocates competitive bidding as the only viable method for allocation of PPP projects in India. Another approach followed is the Swiss challenge approach.

**Swiss Challenge Approach**

Swiss Challenge approach is used specifically when the government authority receives an unsolicited proposal for a project. The private entity submitting the unsolicited proposal is termed as the “Original Project Proponent “(OPP). The government evaluates the proposal submitted by the OPP and if it finds the proposal good then, it invites other parties to submit competing proposals. The other parties are expected to match or better the terms of the OPP’s proposal. To balance for the effort in bringing the original proposal, the OPP is given a chance to match or better any competing proposal at par with the original.

The Swiss Challenge system enables the public sector to introduce some competitive pressure, thereby avoiding some of the non-competitive concerns raised by unsolicited
proposals. The private sector is invited to match or better the OPP’s proposal through innovation, quality and efficiency. Despite this, the system is not entirely competitive since it is difficult to avoid a bias in the evaluation towards the OPP and there could be some lack of enthusiasm by competitors to make their best effort since they would expect the OPP to have an advantage. This could be because the OPP has more information than its competitors. Swiss Challenge might also not meet the conditions for procurement prescribed by relevant legislations. A major issue is that many unsolicited projects are lack of competition and transparency Both the World Bank and the Asian Development Bank do not allow such procedures under their published procurement guidelines.

2.7 Risk involved in PPP Projects
Risk is a fundamental feature of any PPP project and it substantially influences the total project cost. It is essential for the public and private partner to extensively evaluate all the potential risks throughout the whole life of the project to decide whether to take up the project or not and what type of PPP model would be most appropriate for the project. PPP projects carry several risks that are unique to this type of delivery system in addition to the risks associated with more traditional assignments. Once the bidder has been selected and the two parties are at the negotiation stage both the parties need to determine the most suitable risk sharing arrangement that optimizes the benefits and minimizes the loss to both the parties.
**Risk Management in PPP projects**

Risk Management is the process of identifying, analyzing and addressing significant risks on a ongoing basis. The key aspect of a PPP project is that the risk is allocated to the party who can best manage it. There are three ways to allocate the risks in a PPP project:

- Transferred risks – Risks transferred to the concessionaire
- Retained Risks- Risk retained by the Public party
- Shared Risks: Risks shared between the concessionaire and the Public party.

The risk management consists of the following phases subject to negotiations among the public and private partner.

**Risk Identification**: Set up the list of project risks and identify those with the most potentially adverse impact.

**Risk Assessment**: Analyze the risk with different quantitative and qualitative tools.

**Risk Allocation**: Distributing the various risks arising in the project, to the party who can best manage it.

**Risk Mitigation**: Both the parties can use different risk management strategies
Types of Risks associated with a PPP Project

Political risk

Political risks have strong impact on opportunities in PPP projects. There is a risk of lack of consistency in the project awarding criteria, political support risks, restrictions on import and export, and failure to renew approvals. The project company and the lenders face the risks that the project execution may be negatively affected by the policies of the government like changes in taxes, development approvals etc. If there is a change in the government, there is a chance that the new government may unilaterally change the rules.

Commercial Risks or Financial Risks

Financial risks are risks due to changes in the cost of capital due to changes in exchange rates, inflation and prevailing lending rates in the country. Exchange rate risk relate to the possibility that changes in foreign exchange rates would alter the exchange value of cash flows from the project. Interest rate risks force the project to bear additional financing costs. The risk is significant because in PPP projects large sums are borrowed for long period of time.

Legal risks

This type of risk relates to the legal framework, dispute resolution, expropriation and nationalization. Sometimes the concessionaire could face problems related to title or lease of property, insolvency of the parent company, changes in law and regulations, breach of financial documents, development approvals etc.
Development risk:

These risks can be categorized as

- Project preparation risks
- Bidding Risk
- Approval risks
- Transnational risk

Construction risk

Construction risk refers to the risk that the construction of the assets required for the project will not be completed on time or to the specification. The time overrun may lead to additional construction costs like additional raw material, labor, overhead cost. Sometime the delay in the project is due to delay in obtaining approvals during the construction phase which will result in the delay as per the construction schedule leading to time and cost overruns. They include:

- Land Expropriation: These risks may flow to both the government and concessionaire. Available actions include claims under expropriation legislation or claims by the concession company of liquidated damages from the contractor.
- Cost Overruns: These risks affect the concession company directly. The available actions are to either claim liquidated damages from the contractor or draw down standby finance from the project lenders.
• Cost and Scope of Unspecified Work and Variations after identified: These risks are assigned directly to the contractor and the concessionaire and represent a potential area of future disputes.

• Increased Financing Costs: This risk flows directly to the concession company, which may attempt to mitigate the risk either by a new injection of equity or subordinated debt from the sponsors. Alternatively, the concession company may draw down standby finance from project lenders.

• Contractor Default: This is a risk to the concession company, which may claim liquidated damages from the contractor or make a claim against the contractor’s performance bond and bonding company.

• Default by Concession Company: This is the flip side of the prior risk. This risk is to the contractor, with the primary mitigating measure being claim of liquidated damages from the concession company.

• Environmental Damage: This risk accrues to the concession company primarily and may result in claims on insurers or the party causing the damage.

Operational and Maintenance risk
Operational and Maintenance risk consists of cost overrun, time overrun, contractor default etc and are borne by the concessionaire. The operating risk has interrelated components: technical, management and costs. The ability to economically achieve the desired operating rate depends upon the engineering, experience, and quality of staff applied to the project. Operating cost projection is the key element for assessing the
project finance cost. Some of the risks and actions available to the concession company include:

- **Performance risk:** The completed facility cannot be effectively operated or maintained to produce the expected capacity, output or efficiency.
- **Operation cost overrun:** The operating costs exceed the original estimates.
- **Operating Contractor Default:** The concession company may terminate the operations and maintenance contract and appoint a new O&M contractor.
- **Default:** The default may be caused by the actions of a third party, in which case the concession company could make claims of damages against that party.

**Demand risk or Revenue risk**

One of the critical risks is demand risk—the risk that there will not be sufficient demand for the service to be provided under the PPP arrangement and the consequent likelihood that the project company will be unable to repay its financial obligations from project revenues. Reasons could be due to:

- **Inadequate Revenue from Fares:** In the case of a PPP project operating under a government concession, it would be expected that the concession company would request a cash compensation from the government for a deficiency in income from fares or tolls, request authority to increase tolls or fares, or extend the concession period. Here it is necessary to identify its risks clearly with respect to cash flow or its returns, as they may be affected by an extended concession period.
Inadequate Revenue from Other Operation: In this case, similar opportunities exist for requesting the government to provide cash compensation for deficiencies and/or extending the concession period. The concession company would have opportunities to increase rents or pursue different business strategies, including alternate uses of major portions of the concession facility.

Inadequate Traffic: It is essential for the PPP contractor to obtain a commitment from the government, to the extent possible, with respect to anticipated traffic levels and to negotiate a sufficient compensation arrangement for deficiencies. In the event that the government has not offered to provide such additional compensation, needs to review its role carefully as it relates to traffic and earnings forecasts for a PPP project.

Demand risk is very difficult to estimate, especially in developing economies where forecasting demand is a difficult exercise. The public partner commonly assumes that the private partner should take demand risk. Private partner, when it assumes demand risk, asks for more support from government in the form of subsidies, grants or guarantees in order to mitigate the effects of demand risk assumption.

**Force majeure risk**

This risk reflects the occurrence of unexpected and uncontrollable natural and manmade conditions such as earthquakes, typhoons, flooding or war which may negatively affect the construction or operations of the project. The defining of force majeure events, these include:
1. Natural force majeure events: Natural force majeure events comprise of all events that can be attributed to natural conditions or acts of God such as earthquakes, floods, cyclones and typhoons. These risks should be shared equally among the parties.

2. Direct political force majeure events: Direct political force majeure events are events attributable to political events that are specific to the project itself such as exploration, nationalization.

3. Indirect political force majeure events: Indirect political force majeure events are events that have their origins in political events but are not project specific such as war, riots etc.

However, the mechanism of managing allocating and mitigating such risks cannot be categorically stated as they vary with each project and the circumstances surrounding each project.

**Management Risk**

Experienced personnel who can efficiently apply the given technology is crucial while considering the project operational performance. A management agreement may be needed to cover this risk component.
Design Risk
It is the risk of poor engineering and design flaws in a project which can have a crippling effect on the cash flow stream well after the capital has been spent. These risk can arise from poor professional advice or selection of an inexperienced for technology or location involved.

Cost Escalation or Cost Overrun risk or completion risk
Cost escalation due to delays is a common risk associated with a PPP project. The recently commissioned Bandra -Worli sea link project was planned at 300Cr to be completed by 2004 but has actually costed 1,600cr in 2009. Logically any delay in implementation causes increase in cost on account of inflation. This risk is usually not taken by the project lenders. The implication of a sponsor accepting the completion risk is that the cost overruns must be met by the company. Project finance completion test is usually undertaken to estimate this risk which is a very extensive process.

Supply Risk
Supply risk is the risk that relates to the sponsors estimate about the throughput might be correct or not. If the supply is believed to be insufficient the financiers may ask for a warranty.

Risk Assessment
PPP projects require a sophisticated analysis of risk and their impact, to adopt the strategies for risk management. There have been many analysis tools and procedures for
mitigating the risky nature of construction projects. Historically, the probability theory is widely used as an uncertainty reasoning tool.

The techniques are generally categorized as:

Qualitative approach: It is intended to prioritize risks according to their potential effect on project objectives and is one way of determining the importance of addressing specific risks and guides risk response measures. Such techniques are used for compiling a list of main risk sources and describing their likely consequences, without entering in detail about the quantification of the probability of their occurrence. Some of the commonly used qualitative techniques are:

- Probability techniques
- Cause-and-effect diagrams
- Flow charts
- Influence diagrams
- Event trees and fault trees

Quantitative approach: The process aims to analyze numerically the probability of each risk and its impact on project objectives in terms of the usual planning measures, such as time and money. The commonly used quantitative techniques are:

- Decision trees
- Sensitivity analysis
- Monte Carlo simulation
- Multi-criteria decision-making support methods (MDMSMs) such as Analytic Hierarchy Process (AHP), System dynamics, and Fuzzy logic.
**Probability Techniques**

Probability means how likely the risk event or condition is likely to occur. The probability of it occurring can range anywhere from just above 0 percent to just below 100 percent. (It can't be exactly 0 (impossible) or 100 percent, because then it would be a certainty, not a risk.). Impact describes the extent of what would happen if the risk is materialized.

\[
\text{Impact of risk} = \text{Risk intensity} \times \text{Likely occurrence of risk}
\]

Risk Intensity: The intensity of risk means its magnitude or impact, which is influenced by the effect and timing of risk on the project which may be expressed in number of ways. Effect of risk intensity will in turn have cost implications and impact on the estimated financial or economic result. e.g 1 year delay in construction, reduced traffic volume by 15%. Different risks may effect at different times throughout the life of the project. e.g design and construction risks may effect in an early period of the project.

“Probability” and “impact” are used to describe the two dimensions –the uncertainty dimension and the effect dimension while assessing the risk in a project. Probability - Impact matrix is used for determining the riskiness of a PPP project.

**Cause-and-effect diagram**

The Cause and Effect Diagram (CAED) organizes and graphically represents the causes of a particular problem. It is also referred to as the Ishikawa Diagram, or Fishbone Diagram. This diagram-based technique, which combines brainstorming with a type of mind map.
and considers all possible causes of a problem, rather than just the ones that are most obvious.

**Flow Charts**

Flow charts are easy-to-understand diagrams showing how steps in a process fit together. This makes them useful tools for communicating how processes work, and for clearly documenting how a particular job is done.

**Influence diagrams**

Similar to a decision tree an influence diagram is a compact graphical and numerical framework, which identifies the critical variables and explicitly reveals any conditional independence between them.

**Fault trees Analysis**

A fault tree is a logical diagram, which shows the relation between a specific undesirable event in the system, and failures of the components of the system. It is a technique based on deductive logic. An undesirable event is first defined and causal relationships of the failures leading to that event are then identified.

**Event tree analysis**

It is a method for illustrating the sequence of outcomes, which may arise after the occurrence of a selected initial event. This technique, unlike fault tree uses inductive logic. It is mainly used in consequence analysis for pre-incident and post-incident application.
**Decision Tree Approach**

Decision trees are graphical representations of alternative choices that can be made by a project, which enable the decision maker to identify the most suitable option in a particular circumstance. They also help you to form a balanced picture of the risks and rewards associated with each possible course of action.

**Sensitivity Analysis**

Sensitivity generally refers to the variation in outputs (construction costs, revenues, NPV, ROE etc) of a model with respect to changes in the values of the model’s input (concession life, interest rates, inflation rates, capital structure, cost of capital, capital subsidies etc). It is applied in risk management to understand how risk estimates are dependent on variability and uncertainty in the factors contributing to risk. It understands what is driving the risk estimates. The quantitative information provided by sensitivity analysis is important for guiding the complexity of analysis for project risk management. The common metrics of sensitivity are:

Pearson’s Correlation Coefficient: A statistic $r$ that measures the strength and direction of linear association between the values of two quantitative variables. The square of the coefficient ($r^2$) is the fraction of the variance of one variable that is explained by least squares regression on the variable, also called the coefficient of determination.
Monte Carlo Simulation Method

It is a computerized mathematical technique that allows the project to account for risk in quantitative analysis and decision making. It performs risk analysis by building models of possible outcomes by substituting a range of values – a probability distribution – for any factor that has inherent uncertainty. It then calculates results over and over, each time using a different set of random values from the probability functions. Depending upon the number of uncertainties and the ranges specified for them, a Monte Carlo simulation involves thousands of recalculations before it is complete and produces distributions of possible outcome values. During a Monte Carlo simulation, values are sampled at random from the input probability distributions. In this way, Monte Carlo simulation provides a much more comprehensive view of what may happen. It tells you not only what could happen, but how likely it is to happen.

Scenario Analysis: In deterministic models, it’s very difficult to model different combinations of values for different inputs to see the effects of truly different scenarios. Using Monte Carlo simulation, analysts can see exactly which inputs had which values together when certain outcomes occurred. This is invaluable for pursuing further analysis.

Correlation of Inputs: In Monte Carlo simulation, it’s possible to model interdependent relationships between input variables. It’s important for accuracy to represent how, in reality, when some factors go up, others go up or down accordingly.
**Risk Allocation:** Distributing the various risks arising in the project, to the party who can best manage it by creating a risk matrix.

A Risk Matrix identifies project risks, consequences, probability of occurrence, costs and allocation that is used during risk assessment. This is a simple mechanism to increase visibility of risks and assist management decision making. Many standard risk matrices exist in different contexts but individual projects and organizations may need to create their own or tailor an existing risk matrix. A typical risk matrix is shown in the Table 2.4 below.
<table>
<thead>
<tr>
<th>Category of risk</th>
<th>Description and likely effect</th>
<th>Mitigation measures</th>
<th>Allocation</th>
</tr>
</thead>
</table>
| **Developmental risk**           | Insufficient preparatory tasks and project planning leading to delays in procurement and finance close | - Good feasibility study (that includes comprehensive analysis of risks, possible effects and how to address them as well as de-risking to the extent possible)  
- Institutional due diligence  
- Competent transaction   | Government/ implementing agency                                                              |
| **Sponsor risk**                 | Finance strength (ability to participate with equity, can arrange third party equity, Financially solvent and financial requirement does not exceed capacity, can provide limited recourse, if needed)  | - Credit references and rating  
- Minimum level of equity stake  
- Bank guarantee and undertaking  
- Bid bond from banker(s)  
- Track record  
- Ensure adequacy of finance under loan facility  
- Use of non-financial evaluation criteria and due diligence on private parties | Government/implementing agency                                                             |
| **Cost overrun risk**            | During the design and/or construction phase, the actual project costs exceed the estimated cost | - Fixed price and fixed time EPC contract  
- Review by lender’s engineer  
- Contingency provisions; standby debt facilities/additional equity commitments(commitments are needed upfront)  
- Equity stake of EPC contractor   | SPV/PP (can pass on to EPC contract)                                                          |
| **Time overrun risk**            | Takes longer time to complete the project                                                       | - Technical competence and experience of EPC contractor and subcontractors.  
- Retaining, completion bond  
- Penalty regime  
- Full power for implementation to IA  | SPV/PP (can pass on to EPC contractors)                                                          |
| **Input supply risk**            | Raw material and inputs not supplied in time or of less in quantity or of low quality, price escalation of inputs | - contractual framework (provisional for liquidated damages)  
- Secured supply source  
- Relief may be considered if failure or shortage not attributable to any private party.  | SPV/PP(may pass on to input suppliers/ EPC contractor) |
| **Repatriation of capital and profit** | Unable to repatriate capital or profit, currency convertibility and transfer                    | - partial risk guarantee provided by some development banks and ECAs  
- Insurance for political risks (see notes at the bottom of the table)  | SPV/PP                                                                  |
| Operating risk | Factors negatively impacting upon operation and available capacity such as, unreliable/untested technology; increased cost of operation, lower capacity; nature and cost of O&M inefficient operation. | - proven technology, technology transfer  
- clear output specification  
- Independent/lender’s engineer report  
- Guarantee by technology provider, EPC contract  
- O&M contract  
- Sinking fund, maintenance reserve  
- Maintenance bond  
- Contractual framework (penalty regime)  
- Substitution right | SPV/PP/ O&M contractor |
| Demand/ revenue risk | Insufficient demand and/or revenue (due to low demand, leakage, competing facilities, capacity, price setting, augmentation) | - Realistic demand studies, sensitivity analysis  
- Regular monitoring  
- Contractual framework  
- Price indexation  
- Long term off take contracts  
- Take or pay | SPV/PP; Government in case of PFI type or projects with off take arguments with government |
| Change in tax rates | Changes in tax law or policy that have negative effect on the private party, its asset, or the project | - sensitivity analysis to test the robustness of financial return  
- Compensation if such effects are discriminatory | SPV/PP if changes were foreseeable and not discriminatory, otherwise government |
| Force Majeure Natural events | Flood, earthquake, cyclone etc; closure of operations and negative effects on assets and project | - Robustness of cash flow  
- Provision of reserves  
- Contractual provisions to withstand effects of such periods  
- Relief for short-term close down | SPV/PP |
| Force Majeure political events | Change in law, expropriation, revocation of licenses, permits etc, civil disturbance, war, non-default termination of contract. | - Insurance for political risks  
- Contractual framework  
- Provision of compensation | SPV/PP |
| Dispute between parties | Non-compliance of contract provisions, or difference in interpretation of provisions | - Establishment of contract management framework and formalization of management responsibilities  
- Well defined dispute resolution mechanism spelt out in the contract  
- Appropriate regulatory mechanism  
- Termination of contract | Government/ SPV/PP |

*Source: Public private partnerships – A Financiers Perspective, UNESCAP*
Risk Management Strategies

The strategies vary depending upon the risk and the party impacted by the risk. The various strategies are:

- Portfolio management
- Guarantees
- Hedging using derivatives
- Insurances
- Management of financial accounts by third parties

Portfolio management

Sponsors and Financiers manage their risk exposure by having investment mandates and criteria that govern how much exposure to each investment they should have. These mandates dictate the type of projects, loan limits, and sectors that they are willing to invest in. The international financial institutions have also set country specific lending based on the stability of the country. Financiers may also use syndication arrangements to spread the risk by involving other experienced financial institutions.

Guarantees

Guarantees are given by the government depending upon the nature of the project when the economic benefits are more than the financial benefits to the concessionaire. In such cases, the financiers to the project may ask for guarantees by the government to support the debt service obligation depending on the risk assessment and financial viability of the
project. This will add comfort to the investors as the project is supported by government guarantees. Guarantees could be financial in nature or could be in the form of assurance that there will be no change in the environment, regulatory or other policies that will have an adverse effect on the rights of the project sponsors or viability of the project. The international institutions that provides guarantees are.

- MIGA (Multilateral Investment Guarantee Agency): Is a member of world bank and promotes foreign Direct Investment by providing political risk insurance and guarantees to lenders against losses caused due to noncommercial risks to promote economic growth
- World Bank Guarantees: World Bank Guarantees promotes private financing in member countries by providing guarantees and by covering the risks the private sector is not normally in a position to absorb or manage it. This helps mobilizing private financing for infrastructure development and other projects of national importance.

**Hedging using derivatives**

Derivatives are financial instruments in the form of contracts under which the parties agree for payments between them based upon the value of an underlying asset or other data at a particular point in time. The main types of derivatives are futures, forwards, options,
swaps. They are based on different types of assets such as commodities, equities, bonds, interest rates, exchange rates etc.

- **Forwards and Futures**: These contracts are used to fix the price of commodities in future to mitigate fluctuations in price of materials used in construction and maintenance of the project.

- **Swaps**: Swaps are derivatives used by the project sponsors to protect themselves against fluctuations in interest rates and currency exchange. A swap is an agreement whereby two parties agree to exchange future cash flows at preset future dates to reduce losses as a result of future price movements. The most commonly used swaps by the project sponsor are interest rate swap and currency swap.

**Insurance**

It is form or risk mitigation technique used to hedge the risk of a contingent, uncertain loss in exchange of a periodic payment. The terms of the insurance policy will be specific to the project and will be outlined in the contract and the claims from the insurance will enable the sponsors to use the funds for project completion. Usually the sponsors insure for force majeure risk and political risk especially during the construction period.

**Management of financial accounts by third parties**

The revenues generated from a projects will be deposited in an escrow account which will be managed by a third party so that the bondholders are serviced first prior to any other
disbursements. Some lenders to the project request for maintaining a debt service reserve account carrying balance to service requirements for at least six months.

2.8 Legal Framework for PPPs

Legal framework refers to the statutes, acts, rules, regulation, and administrative mechanisms that govern the particular sector/project. This framework defines the rights and obligations of the various stakeholders in the PPP and hence the risk sharing and allocation to each of the parties involved. The Constitution of India does not permit for a single law governing grants of development of projects in the various infrastructure sectors. It distributes the jurisdiction legislative between the state and central governments and the presence of specific laws supporting private participation in a particular sector provides a more secure basis for such participation. In case the legislative body has not enacted such a law, then corresponding executive authority can allow for such participation. Private participation based on such an exercise of executive authority is exposed to a greater degree of political and legal risks as such an exercise is always a subject to a subsequent exercise of a legislative authority. Executive power can be exercised to formulate clear policies and guidelines even in the presence of a specific legislation as long as it is within the framework provided by the law.

**Essential features of legal framework for a PPP project**

Statutory framework as well as contractual documentation determines the “legal framework” governing PSP in a project. The statutory framework is more generic in nature
and governs a specific sector, whereas the contractual framework is project specific. The following are the key features of both statutory and contractual frameworks:

- **Comprehensiveness of rights**—The private sector player should be given all the requisite rights for successful completion and implementation of the project. In case of a BOT project, this would include the following:
  - Right to develop, design, construct, own, operate, manage, and maintain the infrastructure facilities.
  - Right to determine, collect, retain, and appropriate tariffs from the users of the infrastructure facilities.

A wide range of institutional structures and capacity approaches have been adopted for conceptualizing and procuring PPPs across states and central agencies, different variants of which have had some degree of success. At the state level, the three main approaches have been: combining dedicated institutions with cross-cutting legislation; establishing and using cross-sectoral PPP advisory units to help line departments in the absence of overarching legislation; and relying on line departments and sectoral agencies to build capacities.

Gujarat, Andhra Pradesh, and Punjab have developed specialized institutions and legislations. Each of these states have constituted an agency (respectively, the Gujarat Infrastructure Development Board, the AP Infrastructure Authority, and the Punjab Infrastructure Development Board) and passed acts to promote PPP in infrastructure
projects across sectors. As an illustration, the Gujarat Infrastructure Development Act, 1999, gives force of law to the provision of entering into a concession agreement with a private sector developer, provides transparent procedures for selection of the developer, and provides for levying user charges for the facilities provided by the developer.

A second category of states, including Karnataka, Rajasthan, Uttaranchal, and West Bengal, has developed cross-sectoral facilitation entities, but has not passed comprehensive legislation. In Karnataka, the iDeCK is a joint venture between the state government and IDFC, providing advisory services such as enabling frameworks, project development and structuring, and management of a project investment fund. The Rajasthan Project Development Corporation is similar in structure, a joint venture between the state government and IL&FS to facilitate private investment in infrastructure, including policy advisory services to the state government, and institutional support to structure and implement PPPs. The ICICI--West Bengal Infrastructure Development Corporation Limited is a joint venture between ICICI Bank Group and government of West Bengal, formed with the objective of accelerating the development of infrastructure.

Finally, a third category of states, including Madhya Pradesh, Maharashtra, and Tamil Nadu, has relied on sectoral and line agencies to develop and implement PPPs. In Madhya Pradesh, for example, initially the MP Public Works Department and then the specially created MP Road Development Corporation (MPRDC) act as the agency for development of road projects on a BOT basis. In the process of developing projects, MPRDC has developed policy, guidance materials, and skills. In Maharashtra, the Maharashtra State
Road Development Corporation (MSRDC) and Mumbai Metropolitan Region Development Authority have developed policies for infrastructure development through Private Sector Participation (PSP), including a “policy on implementation of road & bridge projects through PSP”.

At the central level, the NHAI has developed and modified standard concession agreements, and has developed different approaches for extending government financial support for PPPs. The capacity building measures underway at NHAI focus on improving human resources, financial systems, bid process management and include internal training, study tours, and the development of a robust Management Information System (MIS) system. For the rail sector, an SPV called Rail Vikas Nigam Limited has been floated to develop, mobilize resources, and implement PPPs. There are no obvious structures in place at the central level to transfer expertise and knowledge built up in one agency; for example NHAI to a second that is just embarking on PPPs.

There is no clear link between institutional structures and success in developing PPPs in India. It is clear from the experience of Madhya Pradesh and Maharashtra in the development of PPPs for roads that it is possible to develop a PPP program in a single sector by building up capacities in line departments. However, these states are conspicuous by their absence of PPPs in other sectors, no doubt at least in part driven by the absence of platforms to transfer acquired skills to other departments. Gujarat, Andhra Pradesh, and Punjab have all developed cross-sectoral enabling legislation and dedicated agencies but have had very different track records in terms of taking PPPs successfully to the market.
Some other states, such as, Tamil Nadu, have also developed a few PPPs across a wide range of sectors, without explicit cross-sectoral PPP units or legislation.

Fundamentals such as political commitment toward the use of PPPs, sufficient trained staff, and strong links between built-up capacity and implementation responsibility in the respective line departments are probably the most important ingredients of success.

Subjective of inadequate provisions for collection and appropriation of tariffs/tolls/fees by the private entity, in the absence of specific right to retain and appropriate tariff, there is always a possibility of challenging the revenue stream from the facility as being a public revenue stream and should go into the consolidated fund of the state rather than a private revenue stream that is a property of the private developer.

There is a lack of legal framework for enabling an adequate and independent regulation. The establishment of a regulator is not enough, the law should provide for mechanisms to make the regulator independent of influence of the political and government setups as well as from the private developer. Only few sectors have dedicated regulatory agencies like power and telecom and for most sectors there is no regulator at all.

The laws should provide for adequate dispute resolution mechanisms. Disputes are bound to happen in such large projects but the legal framework should make enough provisions so that these disputes can be settled amicably and in a speedy manner so that there are no
delays in the implementation of the project. Table 2.5 shows the institutional framework for some states and central agencies in India.

Table 2.5
Institutional Framework for Selected States and Central Agencies

<table>
<thead>
<tr>
<th>State/agency</th>
<th>Legal framework</th>
<th>Decision-making responsibility</th>
<th>Project development responsibility</th>
<th>State support funding</th>
<th>Conflict resolution within govt.</th>
<th>Guidance materials</th>
<th>Established regulatory agency</th>
<th>Dispute resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gujarat</td>
<td>Gujarat Infrastructure Development Act, 1999</td>
<td>GIDB &amp; departments</td>
<td>GIDB</td>
<td>Departm ents; case to case basis</td>
<td>GIDB</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
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<tr>
<td>Andhra Pradesh (AP)</td>
<td>AP Infrastructure Development Enabling Act, 2001</td>
<td>Infrastructure authority</td>
<td>APIIC (as a nodal agency)</td>
<td>Departm ents; case-to-case basis; APIIC/IA is involved</td>
<td>Infrastructure authority</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Madhya Pradesh (MP)</td>
<td>For selected sectors, e.g., MP Highway Bill, 2001</td>
<td>Departments</td>
<td>Departments and agencies such as MPRDC and MPPWD</td>
<td>Departm ents; case-to-case basis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Maharashtra</td>
<td>Government orders for road &amp; port sectors MIDAS Act awaiting cabinet approval</td>
<td>Departments</td>
<td>Departments and agencies such as MSRDC</td>
<td>Departm ents; case-to-case basis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Tamil Nadu</td>
<td>X</td>
<td>Departments</td>
<td>Departments &amp; agencies such as TIDCO, TNRDC, Tamil Nadu Water Investment Company</td>
<td>Departm ents; case-to-case basis</td>
<td></td>
<td>X</td>
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<tr>
<td>State</td>
<td>Department/Agency</td>
<td>Departments &amp; agencies such as Kolkata Metropolitan Development Authority</td>
<td>Departments; case-to-case basis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Punjab</td>
<td>Punjab Infrastructure Development Act, 1998</td>
<td>Punjab Infrastructure Development Board</td>
<td>Punjab Infrastructure Incentive Fund</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Karnataka</td>
<td>iDeCK</td>
<td>Departments and government agencies</td>
<td>Departments; case-to-case basis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>UP</td>
<td></td>
<td>Departments and government agencies</td>
<td>Departments; case-to-case basis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Orissa</td>
<td>State agencies, such as IDCO</td>
<td>Departments &amp; government agencies such as Orissa Industrial Infrastructure Development Corporation</td>
<td>Departments; case-to-case basis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Delhi</td>
<td>Departments and government agencies</td>
<td>Departments &amp; government agencies such as DSIDC, Delhi Tourism &amp; Transportation Dev. Corp.</td>
<td>Departments; case-to-case basis</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>NHAI</td>
<td>National Highways Authority of India Act, 1988</td>
<td>National Highways Authority of India and Ministry of Road Transport and Highways</td>
<td>Central Road Fund and Aid from Donor Agencies</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Rail Vikas</td>
<td>Created under the National Rail Vikas Yojana</td>
<td>Ministry of Railways, RVNL</td>
<td>Ministry of Railways</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Enabling Framework for PPP projects in India

To address various constraints in the PPP model, several initiatives have been taken by the Government of India to create an enabling framework for PPPs by addressing issues relating to policy and regulatory environment. Progressively, more sectors have been opened to private and foreign investments levy of user charges is being promoted, regulatory institutions are being set up and strengthened, and fiscal incentives are given to infrastructure projects.

1. Public private partnership Appraisal Committee (PPPAC)

This high powered committee has been set up with an objective to reduce transaction costs, enhance coordination among ministries involved and ensured fast track approval of PPP projects. Secretary (Economic Affairs) is the chairman and Secretary (Planning commission), Secretary (Legal affairs) and Secretary of the sponsoring department are the members of the committee. It appraises the project cost and makes the project viable by providing financial support through Viability Gap Funding (VGF) Scheme. The VGF Scheme of the government of India provides financial support in the form of grants to infrastructure projects undertaken on PPP mode—a capital grant at the stage of project construction. These grants are either one time or deferred basis, and are strictly restricted for the purpose of making the projects commercially viable. The scheme restricts its applicability to ‘infrastructure service’ only. Under this scheme, the support of the government in the mode of VGF shall not exceed 20% of the total project cost, but the government or statutory entity may grant an additional 20%, only out of its own budget.
2. **Indian Infrastructure Finance Company Limited (IIFCL)**

Indian Infrastructure Finance Company Limited (IIFCL) has been set up with the specific mandate to play a catalytic role in the infrastructure sector by providing long-term financing to infrastructure projects in India. IIFCL raises funds both from the domestic as well as external markets on the strength of the government guarantees. IIFCL provides for funding viable infrastructure projects through long term debt, or refinancing to banks and financial institutions for loans granted by them or with tenure exceeding 10 years, or any other mode, which may be from time-to-time, be approved by the government.

3. **Indian Infrastructure Project Development Fund (IIPDF)**

IIPDF is corpus fund set up for the purpose of providing financial support for quality project development activities to the states and the central ministries. IIPDF has been created in the Dept. of Economic Affairs, Ministry of Finance, and GOI for supporting the development of credible and bankable PPP projects that can be offered to the private sector. IIPDF is the scheme for funding to cover a portion of the PPP transaction costs, thereby reducing the impact of costs related to procurement on their budgets. Therefore, IIPDF is to assist project that closely support the best practices in PPP project identification and preparation as set out in guidance to be issued by the Dept of Economic Affairs from time-to-time.
4. Capacity Building Measures

A number of capacity building interventions have been initiated by the Government to develop organizational and individual capacities for identification, procurement and managing PPPs like Initiating and strengthening of PPP cells in different states, creating online toolkits and manual and Model Concession Agreements (MCA) for different sectors, proving training on PPP in a phased manner to State Governments, urban Local Bodies and Central Government Departments.

2.9 Chapter Summary

Chapter Two presents the conceptual framework for PPP projects. It defines PPP projects, describes the various types of PPP models, the formation process and the various parties involved for implementation of the project. It discusses the ways for financing PPP projects and the different risks associated with these projects. It provides the legal framework for a PPP projects and shows the institutional framework present for states and central agencies. It also outlines the enabling framework adopted by GOI for encouraging PPP projects in India.

References


5. Dept. of Economic Affairs Govt. of India.( Dec 2010).Promoting Infrastructure development through PPP’s - A compendium of state initiatives published by PPP cell.


7. Five year plans, Planning Commission, GOI at http://planningcommission.nic.in/


17. UN ESCAP (2011) Guidebook on PPP in Infrastructure. UN Publication.


WEB SITES

1. http://planningcommission.nic.in/


4. www.eib.org/epec/