National Economic and Development Authority

Structuring Public-Private Partnerships (PPPs)

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Australian Government

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Governance Reforms (PEGR)

Structuring Public-Private Partnerships (PPPs)

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National Economic and
Development Authority

Message

The Philippines has achieved modest economic growth in the past decade. Its potential to achieve high growth is limited largely by lack of infrastructure. Infrastructure is key to the Philippines attaining a high sustainable and inclusive growth. To ensure efficiency and effectiveness in infrastructure investments, the NEDA sought the support of the Australian Agency for International Development (AusAID)-assisted Partnership for Economic Governance Reforms (PEGR) to develop a set of guidelines and a toolkit on value analysis and structuring public-private partnerships (PPP).

Thus, under PEGR's Reform Agenda (RA) 006-07 entitled "Institution Strengthening of NEDA and Other Oversight Agencies on Value Engineering, Contract Preparation and Performance Monitoring of Infrastructure Projects," two handbooks have been produced: the Value Analysis Handbook and the Handbook for Structuring PPPs.

The Value Analysis Handbook presents the theory and techniques applied in conducting a value analysis to a project. Value Analysis or Value Engineering is one of the tools being explored by the government to achieve a value for money in major development projects, optimize infrastructure expenditures, and increase the efficiency and effectiveness of infrastructure projects.

The handbook for Structuring PPPs shall primarily serve as guide for the implementing agencies and LGUs on allocating its responsibilities vis-à-vis of the private proponent on a PPP project. Structuring a PPP entails allocating risks between the public and private proponent which is important in assessing contingent liabilities.

We hope that with these two handbooks the quality of project development will be improved and thus increasing the likelihood of achieving project objectives.

ROLANDO G. TUNGPALAN
NEDA Deputy Director-General

Message

The Australian Government is pleased to support the Philippine Government's Public Private Partnerships (PPP) program, the centerpiece of the Aquino Administration's development plan to foster more exclusive economic growth, accelerate poverty reduction, and boost private sector participation in the economy.

We hope that this handbook serves as a useful resource in assisting government agencies, local government units, and private proponents to rigorously assess quality and cost efficiencies infrastructure investments to deliver improved value-for-money outcomes.

This is an important initiative jointly undertaken by the National Economic and Development Authority and Australian Agency for International Development and will contribute to maximising the effective and efficient use of public funds and the preparation of High quality infrastructure projects.

TITON MITRA
Minister Counsellor
Australian Agency for International Development

Acknowledgement

The need for assessing and improving infrastructure development specifically the conceptualization, preparation, evaluation, and implementation of an infrastructure project through value for money (VfM) strategies was inspired by Ruben S. Reinoso, Jr., Assistant Director-General and concurrent Director of the Infrastructure Staff (IS) of the National Economic and Development Authority (NEDA). Through the direction of ADG Reinoso and IS Assistant Director Kenneth V. Tarnate, the Social Infrastructure Division (SID) of IS, headed by its Chief, Engr. Elmer H. Dorado, led the preparatory works for the conduct of a study on VfM strategies and strengthening the capacity of the government in handling projects particularly those under Official Development Assistance (ODA) and public-private partnerships (PPPs).

The Australian Agency for International Development (AusAID), through the facility of the Philippines-Australia Partnership for Economic Governance Reforms (PEGR), had been very supportive in making the study on "Institution Strengthening of the National Economic Development Authority (NEDA) and other Oversight Agencies on Value Engineering, Contract Preparation and Performance Monitoring of Infrastructure Projects" a reality and a success by providing the financial assistance and ensuring that study objectives, expected outputs and timelines are met by the engaged consultants. Special thanks are given to the PEGR counterparts for the study, Ian Porter (Facility Director) and Hector Florento (Governance Advisor), for being actively involved in this endeavour.

The Castalia Strategic Advisors, the consulting team engaged by AusAID, had been perseveringly accommodating and helpful in ensuring that concerns and expectations of the government were deliberated and properly addressed.

The following groups/stakeholders, among others, were involved in the study through participation in trainings/workshops which helped in formulating and improving the study outputs and recommendations: NEDA Build-Operate-Transfer (BOT) Group, Office of the President (OP), Government Procurement Policy Board (GPPB), Department of Budget and Management (DBM), Department of Finance (DOF), Department of Public Works and Highways (DPWH), Department of Transportation and Communication (DOTC), BOT Center (renamed as PPC Center), Department of the Interior and Local Government (DILG), Light Rail Transit Authority (LRTA), Philippine Ports Authority (PPA), Toll Regulatory Board (TRB), National Power Corporation (NPC), National Transmission Corporation (TransCo), National Electrification Administration (NEA), Manila International Airport Authority (MIAA), Metropolitan Waterworks and Sewerage System (MWSS), and Metropolitan Manila Development Authority (MMDA). Our partners from the private sector had been enthusiastic in sharing their relevant experience and valuable insights which were crucial to the attainment of this activity's outputs.

The technical staff of other IS divisions: Communications Division, Power and Electrification Division, Transport Division, and Water Resources Division, had actively participated by sharing their sector-specific knowledge, skills, and experiences in every consultation meetings, roundtable discussions, trainings/workshops and case studies/pilot-testing, and by providing their valuable comments and recommendations to all documents and reports submitted to NEDA. The technical staff of SID composed of Arch. Geronimo S. Samoza, Engr. Dulce Agnes S. Marquez, Engr. Maria Genelin L. Licos, Ms. Ramakrishna J. Villanueva, Mr. Omercaliph M. Tiblani and Mr. Rocky E. Dejan, had collectively put their time and effort towards the completion of this undertaking.

The NEDA Staffs include the Administrative Staff (AdS), Agriculture Staff (AS), Information Technology Coordination Staff (ITCS), Legal Staff (LS), Project Management Staff (PMS), Public Investment Staff (PIS), Social Development Staff (SDS), and Trade, Industry and Utilities Staff (TIUS), had been supportive by participating in meetings and trainings and providing their inputs for the refinement of draft reports and other documents formulated under the study.

Lastly, much gratitude to the NEDA generals, Sec. Ralph G. Recto, DDG Rolando G. Tungpalan, DDG Nestor R. Mijares, DDG Margarita R. Songco, and DDG Augusto B. Santos for their unwavering support and utmost guidance in conduct and implementation NEDA-initiated studies and activities such as this, Reform Agenda 006-07 "Institution Strengthening of the National Economic Development Authority (NEDA) and Other Oversight Agencies on Value Engineering, Contract Preparation and Performance Monitoring of Infrastructure Projects" .

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Acronyms and Abbreviations

BIA	Beach International Airport
BLT	Build-Lease-Transfer
BOO	Build-Own-Operate
BOOT	Build-Operate-Own-Transfer
BOT	Build-Operate-Transfer
BOT-PPP	Build-Operate-Transfer Public-Private Partnership
BOT Law	Republic Act No. 6957 as amended by Republic Act No. 7718 - the main legislation dealing with public-private partnership
BT	Build-Transfer
BTO	Build-Transfer-Operate
CAA	Civil Aviation Authority
CAO	Contract-Add-Operate
DOT	Develop-Operate-Transfer
CRITP	Civil Registry Information Technology Project
DBM	Department of Budget and Management
DBO	Design-Build-Operate
DBOF	Design-Build-Operate-Finance
DBOL	Design-Build-Operate-Lease
DENR	Department of Environment and Natural Resources
DOF	Department of Finance
DOTC	Department of Transportation and Communications
DROF	Design-Rehabilitates-Operate-Finance
EDSA	Epifanio de los Santos Avenue, Manila, Philippines
EPIRA	Electric Power Industry Reform Act (of 2001)
ERC	Energy Regulatory Commission
GOPA	Global Partnership for Output-Based Aid
GOCC	Government-Owned and Controlled Corporation (Philippines)
ACAO	International Civil Aviation Organization
ICC	Investment Coordination Committee (a NEDA Board inter-agency committee)
IFC	International Finance Corporation

IRR	(i) Implementing Rules and Regulations (ii) Internal Rate of Return
LGU	Local Government Unit
kWh	Kilowatt-hours
LRT	Light Rail Transit
LWUA	Local Water Utilities Agency
MAMC	Metropolitan Authority of Metro City
MCWD	Metropolitan City Water District
MoT	Ministry of Transport
MRT-3	Manila Metro Rail Transport Line 3
MTA	Metropolitan Transport Authority
MWSS	Metropolitan Waterworks and Sewerage System (Manila and environs)
NCRA	National Civil Registry Agency
NEDA	National Economic and Development Authority
NPC	National Power Corporation
NWRB	National Water Resources Board
O&M	Operations & Maintenance
OBA	Output-based Aid
PFI	Private Finance Initiative (UK)
PhP	Philippine Peso
ppd	Passengers per day
PPIAF	The Public-Private Infrastructure Advisory Facility; a multi-donor technical assistance facility created to help governments in developing countries improve the quality of infrastructure through partnerships with the private sector
PPP	Public-Private Partnership
ROO	Rehabilitate-Own-Operate
ROT	Rehabilitate-Operate-Transfer
SPV	Special Purpose Vehicle

Executive Summary

These Guidelines describe the steps that implementing agencies in the Philippines could follow to structure Build-Operate-Transfer—Public-Private Partnerships (BOT-PPP). The Guidelines are for use by implementing agencies in structuring BOT-PPPs.

Implementing agencies should follow six steps for structuring a BOT-PPP. The steps are:

- Prepare and plan the transaction
- Set objectives and constraints
- Allocate functions to parties
- Set method of payment to the private party
- Identify, assess and allocate risks to parties, and
- Market the transaction

These steps are illustrated in Figure 1. The first step is to prepare and plan the transaction. This includes assigning a transaction structuring team and retaining transaction advisors — these transaction team and advisors will be directly responsible for structuring the transaction and will report to a person or committee that has the authority to make structuring decisions. This first step also includes developing and launching a stakeholder consultation plan, as well as a transaction preparation plan —this plan will identify the tasks needed to progress the transaction to financial closure.

The second step is to set the objectives that the implementing agency is seeking to achieve with a BOT-PPP arrangement and the constraints that exist for this arrangement. These objectives and constraints will guide the decisions on how to allocate functions and risks among the implementing agency and the private sponsor.

The third step is to decide which of the project development and implementation functions will be assigned to the private firm and which will be assigned to the implementing agency or other government agencies. The allocation of functions and risks is closely related. However, it is not always the case that a party that is allocated a function will bear the full risk of performing that function. Allocation of functions and risks is also generally done on the basis of the same principles—that is, allocate to the party that is best placed to perform the function or manage the risk.

A key component of designing a BOT-PPP arrangement is to determine how

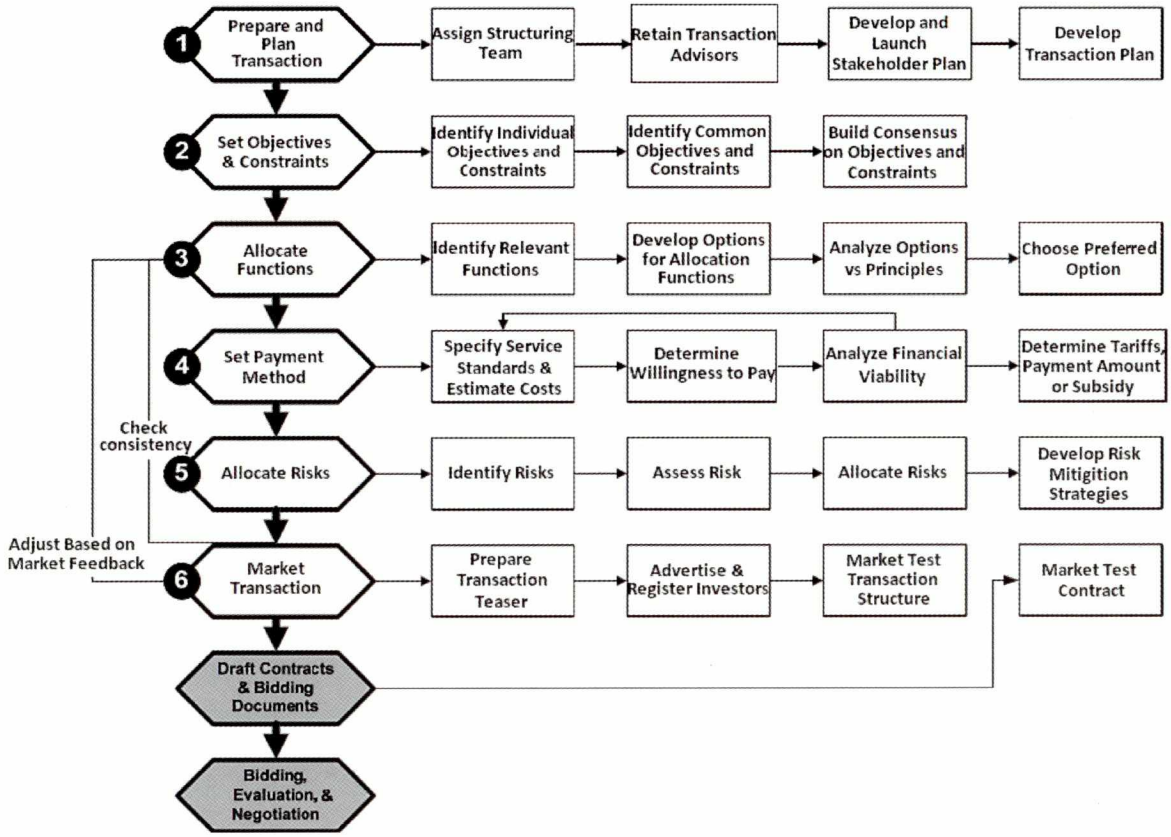


Figure 0.1: BOT-PPP Structuring Steps

the private firm will be paid for performing the functions that it will undertake. The fourth step will address this issue. The allocation of options chosen should be consistent with the nine options described by the BOT Law and its implementing rules and regulation. The BOT Law does allow for other contractual arrangements, however, these are subject to the approval of the President of the Philippines.

The fifth step is to allocate risks. This involves identifying and assessing risks, and deciding how to allocate those risks between the implementing agency and the private firm. The allocation of risks resulting from this step will need to be reconciled with the allocation of functions and payment method selected. These three structuring components are closely related. In fact, the transaction structure will need to be subject to several iterations before it can reach a workable balance between allocation of functions and risks, as well as payment method. The arrow in Figure 0.1 with the label "check consistency" illustrates this iterative process.

Having designed a transaction structure that the implementing agency thinks will meet its objectives, the implementing agency would need to market the transaction with private firms that may be interested in bidding for it. To this end, the implementing agency would prepare a short prospectus that describes the opportunity, advertise the opportunity and ask interested private firms to register their interest. The implementing agency would market test with registered private firms the proposed structure and identify elements of the transaction that need adjustment to increase the interest of private firms and competition for the transaction. The agency must ensure that any adjustments are consistent with the objectives of the implementing agency. Testing the market and adjusting the transaction structure is also an iterative process as illustrated by the arrow labeled "Adjust Based on Market Feedback" in Figure 0.1.

After developing a market structure that has been market tested, the implementing agency will draft the relevant contracts and bidding documents. A set of model contracts and a contract drafting tool have been prepared by NEDA to assist implementing agencies prepare these documents. This draft documents would once more be subject to review and comments from private firms. The implementing agency will decide which comments are worth addressing and which are not.

1 Introduction

The Government of the Philippines wants to improve how Build-Operate-Transfer – Public-Private Partnerships (BOT-PPPs) are structured, and in particular how risks associated with these BOT-PPPs are managed. Lessons learned from more than 61 BOT-PPPs in the country suggest that there is room for improvement. This document – "PPP Structuring Guidelines" – guides government agencies to improve how BOT-PPP projects are structured and their risks managed.

The existing process for approving BOT-PPP projects is set in the BOT Law, its implementing rules and regulations, as well as in the Investment Coordination Committee Guidelines. None of these documents comprehensively define the steps that implementing agencies should follow when structuring a BOT-PPP, and in particular how implementing agencies should manage the risks associated with these projects. The absence of clear guidance on these issues explains why the level of detail and the quality of the structuring work varies greatly from project to project. The lack of guidance on how to structure a BOT-PPP project also makes it more difficult for the National Economic and Development Agency (NEDA) and Investment Coordination Committee (ICC) to review project proposals from implementing agencies. NEDA has identified this lack of guidance as an important gap in BOT-PPP project development and developed these Guidelines to fill that gap.

These Guidelines were designed to fill this gap. They describe the steps that implementing agencies could follow to structure a BOT-PPP. The Guidelines are complemented by sample bidding documents and contracts developed by NEDA and reflect the principles presented in these Guidelines.

The Guidelines are for use by implementing agencies and oversight/evaluating agencies or approving entities in structuring a BOT-PPP. Ideally, implementing agencies will use these Guidelines at a stage in the project life-cycle in which a decision has been made to develop a project through a BOT-PPP, but the BOT-PPP arrangement has not yet been selected. This would generally be the case in projects that are before or at the feasibility stage and have not been submitted to ICC for approval.

Structuring a BOT-PPP means, in the context of these guidelines, deciding:

- How functions related to the development and implementation of the project[1] (design, finance, build, operate, maintain, transfer) are allocated between the private and public parties

[1] Development and implementation of project means all the steps needed to take the project from the feasibility study up to the point in which contract is terminated

- How the private firm will be paid for undertaking the functions allocated to it
- How risks associated with undertaking these functions or payments to the private firm are allocated between the private and public parties and, more generally, managed.

The Guidelines establish steps that implementing agencies should follow to structure a BOT-PPP – these steps are:

- Prepare and plan the transaction.
- Set objectives and determine constraints
- Allocate functions to parties.
- Set payment method to the private party
- Identify, evaluate and allocate risks to parties, and
- Market the transaction.

These Guidelines describe in detail the work that an implementing agency will need to undertake during each of these steps. It also provides implementing agencies with additional sources of information that is relevant to each step. The Guidelines are organized in seven sections, including this introduction.

- Section 2 provides guidance on how implementing agencies should prepare and plan the transaction structuring, including a plan for managing stakeholders
- Section 3 guides implementing agencies on how to set objectives and determine constraints
- Section 4 provides guidance on how functions can be allocated between private and public organizations
- Section 5 guides implementing agencies on how to set the payment method to the private firm
- Section 6 describes how implementing agencies could allocate and manage risks in BOT-PPPs, and
- Section 7 guides implementing agencies on how to market the transaction.

Each of these sections, except sections 2 and 7, is organized in four subsections that:

- Define the scope
- Set out the principles that apply
- Provide guidance on how the step should be carried out
- Illustrate how the step could be applied to a specific type of BOT-PPP transaction.

Five types of BOT-PPP transactions have been used as examples in these Guidelines – these transactions are described in Appendix A. These Guidelines can also be used to help implementing agencies assess if an unsolicited PPP projects is well structured or not. Specific guidance on how to apply these Guidelines to unsolicited projects is presented in Appendix A.

2 Prepare and Plan Transaction

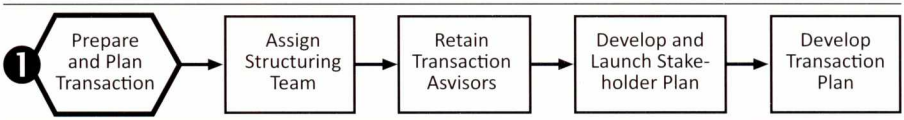
An implementing agency's first step in structuring a BOT-PPP should be to prepare and plan how the transaction will be managed. This includes assigning a BOT-PPP structuring team and retaining transaction advisors. The structuring team and transaction advisors will be directly responsible for structuring the BOT-PPP and will report to a person or committee that has the authority to make structuring decisions. The first responsibilities of this team should then be to develop and launch a stakeholder management plan and to develop a transaction preparation workplan, identifying the tasks needed to take the transaction to financial closure.

This section first describes, in Section 2.1, each of these elements of preparing and planning a BOT-PPP transaction. Section 2.2 then presents some examples on how these steps could be followed.

2.1 Steps to Follow

Figure 2.1 illustrates the steps that implementing agencies should follow to prepare and plan a BOT-PPP transaction.

Figure 2.1: Steps to Prepare and Plan Transaction



These four steps are described in turn below:

Step 1: Assign Structuring Team

The implementing agency should assign a team to structure the BOT-PPP. This team will report to a committee or people that have the authority to make decisions on the structure of the BOT-PPP. The structuring team will be responsible for managing the BOT-PPP transaction from concept to closure. In many cases the people that are part of this structuring team will also have a role in managing the BOT-PPP contract. These people, by being part of the structuring team, will have acquired a deep understanding of the contract and will be well placed to supervise its implementation.

Usually this structuring team will be led by the head of the planning department or division of the implementing agency and will include members from the engineering, legal and finance divisions. The head of the planning division is well placed to coordinate the efforts and inputs from other divisions. The head of the planning division also typically has direct access to key decision makers

such as the head or board of the implementing agency – which is generally the level ultimately responsible for making all BOT-PPP structuring decisions. For example, within the Department of Transportation and Communications (DOTC), the Assistant Secretary for Planning and Project Development could be well placed to lead the structuring team. In a smaller department or Government Owned and Controlled Corporation (GOCC) like the Metro Cebu Water District, the general manager would be best placed to lead this team.

The structuring team should include members with the following skills:

- Finance – degree in finance, including courses in accounting, corporate and project finance, with more than 10 years' experience in financial analysis, forecasting financial statements, corporate finance or project finance
- Legal – law degree, with more than 10 years' experience in drafting laws and regulation and preparing contracts
- Economics – degree in economics, with more than 8 years' experience in economic analysis of projects; ideally with experience or understanding of key concepts on economic regulation
- Engineering – degree in the relevant engineering field, with more than 10 years' experience in feasibility studies or design of relevant infrastructure assets, as well as experience in operation and maintenance of these assets.

Useful information on how to select this team can be found in chapter 9 of the "Practitioner's Guide – Part Two: How to Develop a Partnership" published by Partnerships Victoria. The link to this document is:
http://www.partnerships.vic.gov.au/CA25708500035EB6/WebObj/Practitioners Guide 3-PartTwo/$File/Practitioners%20Guide3%20-%20Part%20Two.pdf

Step 2: Retain Transaction Advisors

The implementing agency should seek the support of specialized transaction advisors. Experience with several successful and failed BOT-PPP transactions in the Philippines and elsewhere has consistently shown the importance of competent transaction advisors. Transaction advisors will generally include a team of financial, technical, regulatory and legal advisors – typically under the lead of an investment bank.

Transaction advisors are generally paid a retainer and a success fee. The retainer is paid by the implementing agency and the success fee by the winning bidder. The size of the retainer and success fee vary with the size of the deal, and in some cases could be up to one percent of the total project cost. For example, in

a project that involves building a facility worth US$200 million, the cost of the transaction advisor could be US$2 million, split at US$0.5 million for the retainer fee and US$1.5 million for the success fee. Implementing agencies usually find it difficult to find the funds to cover the retainer of the transaction advisor. There are facilities available at multilateral agencies that could provide grants to cover the cost of advisors. One of these facilities is the Public-Private Infrastructure Advisory Facility (PPIAF) – their website, with information on how to apply for grants, is http://www.ppiaf.org/content/view/48/77/.

One of the barriers that implementation agencies face when trying to retain transaction advisors is the lack of funds available to pay these advisors, as well as the need to follow a lengthy and bureaucratic procurement process that could delay the transaction process and also deter the interest of first-class advisory firms. Governments in other countries have adopted different types of solutions to these problems. Some examples include:

- Colombia – Colombia created a type of PPP unit – Gerencia de Participacion Privada en Infraestructura – that has dual role of supporting the development of PPP related policies and engaging and managing transaction advisors for specific deals. This unit has received funding from the Inter-American Development Bank (IADB) under three consecutive loans of around US$13 million each. The unit has been in place since 1996 and has delivered good results. The funds from the IADB loan are managed by the United Nations
- Development Program (UNDP) – this means that UNDP is responsible for all the procurement and contracting process of advisors, and make payments to advisors based on instructions from the implementing agency. More information on this program can be found on the following weblink
  http://www.dnp.gov.co/PortalWeb/Programas/
  Transportevíascomunicacionesenergíaminería/
  ParticipaciónPrivadaenProydeInfraestructura/Participaciónprivada
  eninfraestructuraPPCIII/tabid/667/Default.aspx
- Indonesia – The National Development Planning Agency (BAPPENAS) in Indonesia established with support from the Asia Development Bank a US$26.5 million Infrastructure Project Development Facility (IPDF). The purpose of this facility to pay for the cost of transaction advisors. The expected outcome is well structured PPP contracts. This facility was not worked very well in that the volume of transaction that they have supported is well below expectations. More information on the ADB loan supporting IPDF can be found on this weblink http://pid.adb.org/pid/LoanView.htm?projNo=40009&seqNo=01&typeCd=3

Implementing agencies should retain transaction advisors even in the case of unsolicited proposals. In fact, implementing agencies would need the most support when they are negotiating an agreement with an unsolicited proponent. Implementing agencies need competent legal and technical advisors to help identify the flaws and risks of the proposed project and agreement. For example, the MCWD retained the International Finance Corporate (IFC) to advise on negotiations with the unsolicited proponent of a bulk water supply project. With the support of IFC, MCWD drafted a completely new version of the bulk water supply and agreed on much better technical and financial terms. The revised agreement was approved without delay by NEDA-ICC.[2]

The transaction advisory team should be led by an international firm that has a track record in:

- Acting as lead transaction advisor to government clients for greenfield or brownfield infrastructure projects of a comparable scale and complexity, and in relevant sectors
- Acting as financial advisor to private sponsors on the development, financing, construction, or expansion of projects in the relevant sector

  Advising governments or private clients in the Philippines.

A helpful indicator of relevant experience is the firm's presence within the top 20 financial advisors on merger and acquisition deals in Asia-Pacific league tables, published by Thomson Financial.

The lead transaction advisor should include in its proposed team firms with legal, technical, and regulatory expertise related to the project. These firms may be international or Philippines-based or a combination of the two. Each firm should be able to demonstrate its corporate experience – as well as that of the proposed expert team members – in developing, building, or financing projects in the relevant sector.

Useful guidance on how to hire and manage a transaction advisor can be found on the PPIAF published *"Guide for Hiring and Managing Advisors for Private Participation in Infrastructure"*. The link to this document is: http://www.ppiaf.org/documents/fulltoolkit.pdf.

If the implementing agency has limited experience structuring transactions, it is common practice in other countries to retain a second, smaller group of transaction advisors. These advisors can provide a second, objective opinion on the advice of the lead transaction advisor. Transaction advisors that are paid on a success fee basis have a strong incentive to close the transaction in shortest

2 This transaction did not proceed to Swiss Challenge and closure for other reasons

The transaction preparation workplan should be prepared by transaction advisors, drawing on their experience in other transactions and on the experience with similar transactions in the Philippines. The steps proposed in these Guidelines will also be useful in preparing the workplan. The plan should be reviewed and approved by the structuring team at the implementing agency, and by the person or committee at the implementing agency that is overseeing the transaction. The plan should be updated periodically; major changes to the timeline or resources should be approved by the person or committee overseeing the transaction.

2.2 Example

This section describes how the four steps described in Section 2.1 can be applied to the mass rapid transit transaction described in Appendix A.2.

The Metropolitan Transportation Authority (MTA) of the City of MyCapital is interested in implementing a new light rail line along a 17 km stretch of one of MyCapital's busiest thoroughfares. The new line is also known as the Silver Line and will be located in MyCity's densely built west side. MTA is interested in implementing the Silver Line project using a BOT-PPP for the provision of infrastructure only, since it is already leasing rolling stock for the rest of the system. Hence, the Silver Line light rail PPP project will involve financing, designing, constructing and maintaining the new rail line.

The line is expected to serve a demand of about 300,000 passengers per day (ppd) at start-up. This demand is expected to reach 500,000 ppd within 10 years, and stabilize at 600,000 ppd by year 15 for the remainder of the concession period. The Silver Line is expected to significantly relieve traffic congestion on the road corridor, and consequently reduce average travel time for transit users by 30 percent.

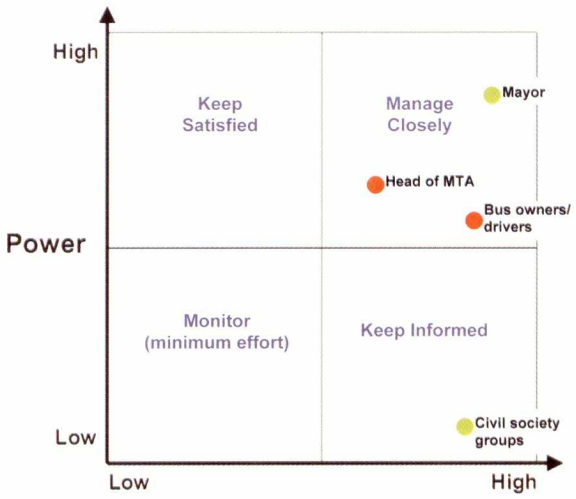
Step 1 – The transaction structuring consists of the following staff from MTA: head of planning department (as team leader), one manager from the legal department, one manager from the engineering department, one manager from the finance department and three analysts. This team reports directly to the General Manager of MTA. Given the scale and importance of this project, the Mayor of MyCapital has the ultimate authority to decide on the structure of the transaction.

Step 2 – MTA applied and received a grant from donor agency to pay for the retainer of a transaction advisor. A competitive selection process was followed – using the procurement rules of the donor – to select a transaction advisor. The transaction advisory firm is led by an international investment bank, has a team of international and Filipino lawyers, international and local engineers, as well as experts in other relevant areas like ridership forecasts.

Step 3

Step 3.1 – The implementing agency and its transaction advisors developed the following stakeholder map based on their analysis.

Figure 2.3: Stakeholder Map



Step 3.2–Stakeholder Management Plan

Stakeholder Name	Communications Key Approach	Interests and Issues	Current Status	Desired Support	Actions and Communications
Major	One-on-one meetings	Reduce travel time Fares charged to passengers Limit fiscal impact	Strong Supporter	High	Meet once a month; report progress
Head of MTA	One-on-one meetings	Avoid losing control over transport	Opposes project	Do not block	Use Major and civil society to pressure for support
Head of Civil Society Group	One-on-one meetings/press/ workshops	Reduce travel time Keep fares low	Strong supporter	Medium	Keep informed of progress
Head of Bus Driver owner Association	Press/workshops	Avoid job / revenue loss	Opposes project	Do not block	Use Major and civil society support to obtain support

Step 4 – The transaction advisor prepared a transaction workplan, of which a portion is illustrated in Figure 2.4

Figure 2.4: Sample Workplan

ID	*Task Name*	*Organization Responsible*	*Level of Effort (Days)*	*Cost (PhP mill)*	*Risk of Delays*	*Risk Mitigation Measure*	*Mar 2009* 3/1 3/8 3/15 3/22
1	Identify stakeholders	Transaction Advisor	8	0	New & important stakeholders emerge	Wide search at transaction outset	[redacted]
2	Define objectives & constraints	Structuring team	10	0	Objectives & constraints change as new information emerges	Educate decision-makers on what to expect from transaction	[redacted]
3	Review feasibility study	Transaction Advisor	15				[redacted]
4	Define additional technical work	Transaction Advisor	3		Additional technical work needed		[redacted]

3 Set Objectives and Constraints

With a structuring team assigned and transaction advisors retained, the next step is to set the objectives that the implementing agency and stakeholders want to achieve, and the constraints affecting the transaction. These objectives and constraints will guide structuring decisions.

Clearly articulating and agreeing on objectives and constraints at the start allows all stakeholders to work towards the same result. It also provides a framework for choosing between options and resolving disputes about design. For example, agreeing that a BOT-PPP should reduce the life cycle costs of a project would serve as a basis for deciding in favor of a BOT-PPP option that integrates construction and operation of an asset, rather than one in which the private firm is responsible for construction and the implementing agency is responsible for operations.

To help implementing agencies identify stakeholders and set objectives and constraints, this section is organized as follows:

- Section 3.1 defines what these Guidelines mean by objectives and constraints
- Section 3.2 lists the principles that implementing agencies should follow to prepare and plan the transaction structuring process
- Section 3.3 describes the steps suggested for setting these objectives and constraints, and
- Section 3.4 presents some examples

3.1 Definition

Definition: *Objective means the result that the implementing agency and stakeholders want to achieve with a BOT-PPP arrangement.*

Constraints means restrictions – including legal, political and others – that would influence the choice of BOT-PPP arrangement

When using these guidelines, implementing agencies will probably have already decided to develop the project as a BOT-PPP, but will need to decide which specific BOT-PPP arrangement to use. The most appropriate BOT-PPP design depends on the objectives set by the implementing agency.

The objective sought in doing a project as a BOT-PPP may be a sub-objective of the broader objective of doing the project. For example, the objective sought with a greenfield road project could be to reduce travel time between two points

in a cost-benefit justified and least cost way. Building the road may contribute to the sub-objective to 'reduce travel time'; building a road versus building a railroad may contribute to the objective; while the decision to do a BOT-PPP may contribute to the sub-objective of 'in a cost-benefit justified and least cost way' objective. On the other hand, the objective sought with developing this road under a BOT-PPP arrangement could be to reduce the life-cycle cost of this road whilst ensuring that the reduction in travel time objective is achieved.

Implementing agencies should also set at the start the constraints – such as legal or regulatory requirements or institutional capacity issues or political realities – that narrow the choices of BOT-PPP arrangements. For example, the Electric Power Industry Reform Act (EPIRA) of 2001 establishes that the National Power Corporation (NPC) is no longer allowed to enter into power purchase contracts with Independent Power Producers. This legal provision excludes BOT-PPPs for power generation entered into by NPC. Likewise political constraints should be considered when structuring the BOT-PPP arrangement. These might include things like avoiding price increases or job losses.Ignoring these constraints will only delay or obstruct the structuring process of a BOT-PPP arrangement.

3.2 Principles to Follow

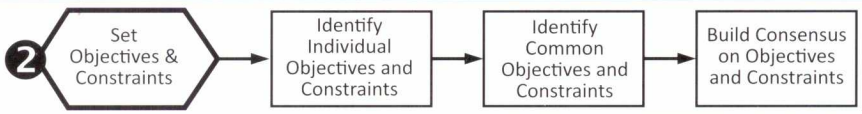
When setting objectives and constraints, implementing agencies should consider the following principles:

- Set clear and well articulated objectives and constraints – for example:
  - Clearly defined objective: minimize life-cycle cost of project
  - Poorly defined objective: minimize project costs
- Avoid setting conflicting or duplicate objectives – for example, defining an objective of minimizing life-cycle costs and of increasing efficiency could be duplicative. On the other hand setting objectives of both maximizing revenue to government and minimizing costs to consumers may create a conflict, with the result that the objectives set no longer can provide a clear guide to design
- Identify the relative importance among the objectives and constraints – in other words, which objectives and constraints are more important than others, and which less so
- Set objectives and constraints that represent the consensus of key stakeholders – stakeholders would at least include various levels of Government and representatives from the users or beneficiaries of the project.

3.3 Steps to Follow

Implementing agencies should follow the steps outlined in Figure 3.1 to set objectives and constraints.

Figure 3.1: Steps for Defining Objectives and Constraints



Each of these three steps is described in turn below:

Step 1: Identify Objectives and Constraints of Key Decision Makers

The transaction advisors will work with key decision makers to identify the objectives they seek to achieve with the project and the constraints the think would affect the implementation of the project. Most of this information would have already been obtained from Step 3.1.3 of the stakeholder consultation plan described in section 2.

This information will be tabulated in a matrix with three columns and one row for each decision maker. The second column of the matrix will list the objectives and the third the constraints.

Step 2: Identify Common Objectives and Constraints

The information presented in the matrix described in step 1 will be reorganized to identify objectives and constraints that are common to decision-makers. A new matrix with three columns and one row of each objective and constraint will be used. The second column will list the name of the decision makers that indicated their preference for that objective or constraint, and the third column will indicate the apparent level of importance (high, medium or low) of that objective based on how many decision-makers referred to it.

Step 3: Build Consensus on Objectives and Constraints and Relative Importance

The implementing agency and transaction advisor will organize a workshop with the main objective of reaching consensus on the objectives and constraints and their relative importance.

The output of the workshop would be a statement of objectives and constraints—usually presented as a one or two page document with a clear and succinct description of the objectives and constraints, their relative importance and the stakeholders that were consulted to reach consensus on these.

3.4 Example

This section describes how the three steps described in section 3.3 can be applied to the mass rapid transit transaction described in Appendix A.2.

The Metropolitan Transportation Authority (MTA) of the City of MyCapital is interested in implementing a new light rail line along a 17 km stretch of one of MyCapital's busiest thoroughfares. The new line is also known as the Silver Line and will be located in MyCity's densely built west side. MTA is interested in implementing the Silver Line project using a BOT-PPP for the provision of infrastructure only, since it is already leasing rolling stock for the rest of the system. Hence, the Silver Line light rail PPP project will involve the financing, designing, constructing, and maintaining of the new rail line.

The line is expected to serve a demand of about 300,000 passengers per day (ppd) at start-up and this demand is expected to reach 500,000 ppd within 10 years and stabilize at 600,000 ppd by year 15 and through the end of the concession period. The Silver Line is also expected to significantly relieve traffic congestion on the road corridor, and consequently reduce average travel time for transit users by 30 percent.

Step 1 – the key decision makers in this case are the Major and the Head of MTA. Their individual objectives and constraints are:

Stakeholder Name	Objectives	Constraints
Major	Risk transfer to private sector Minimize the whole-of-life cost of the system	Charge fares that are slightly higher than what buses charge
Head of MTA	Maximize quality of service	Limit supervision by MTA

Steps 2 and 3 – given that there are only two decision-makers and that the Major has authority over the Head of MTA, the objectives and constraints established by the Major are set as those that should be used to drive the structuring of the PPP.

Some of the commonly used objectives pursued with a BOT-PPP include:

- *Risk transfer to the private sector* – stakeholders might want to do a BOT-PPP to allocate some of the risk to a private firm which can better manage these risks at least cost and substantially reduce the overall cost of the project
- *Minimize whole-of-life costing* – stakeholders might also want to do a BOT-PPP to minimize life-cycle costs by fully integrating – under the responsibility of one party – design and construction costs with

ongoing service delivery, operational, maintenance and refurbishment costs

- *Innovation* – stakeholders could also seek to use a BOT-PPP to introduce private sector innovation. Innovation is more common in BOT-PPP arrangements which focus on output specifications, providing wider opportunity and using competition as an incentive for bidders to develop innovative solutions in meeting these specifications
- *Maximize asset utilization* – a certain BOT-PPP arrangement might also be preferred by the Government if it maximizes the utilization of an asset by generating opportunities for revenue beyond the government or user payment stream and this is used, in part, to reduce the cost of services to government or end-users
- *Minimize public sector borrowing by accessing private finance* – stakeholders might see a BOT-PPP as a way of taking infrastructure BOT-PPP projects off the government's balance sheet. This is possible in projects in which users pay the full cost of service or in countries in which government accounting rules do not classify government payment obligations under a PPP as a long-term liability

These objectives, as discussed in section 3.2, are a subset of the broader objectives sought with project. The project objectives are more generally to build an asset or provide a service in a cost-benefit and least cost way. These objectives contribute to developing the project in cost-benefit and least-cost way.

Some example of common constraints include:

- *Minimize or avoid increases in prices to end-users* – some stakeholders, particularly those who are more directly concerned with the interest of end users, would advocate minimizing increasing prices paid by end-users
- *Maximize ownership of national private firms* – foreign ownership rules in the Philippines limit the type of private firms that could be eligible as private partners
- *Minimize loss of jobs* – stakeholders could also have strong views, particularly in the concessions of existing services, about minimizing the job losses or changes in employment conditions that could result from the PPP
- *Minimize the time until the project is commissioned* – it is also common for politicians to demand that BOT-PPP projects are structured and implemented as soon as possible and ideally within their term at government or as soon as possible to resolve a crisis or relieve a bottleneck.

Clearly understanding these objectives and constraints will provide an effective framework for structuring the BOT-PPP.

4 Allocate Functions

The process of implementing an infrastructure project can be broken into a number of jobs, or functions. These include design, construction, financing, operations and maintenance. Once objectives are clear, a good next step is to decide which functions should be given to the private partner, and which retained by a government agency. This section provides guidance to implementing agencies on how to make this allocation.

The allocation of functions and risks is closely related. Most functions have a set of risks associated with them. For example, if the private firm is responsible for designing and constructing an asset, it should logically bear the risks associated with that function.However, it is not always the case that a party that is allocated a function will bear the full risk of performing that function. There are situations –for example construction of tunnels – in which a private firm is responsible for doing the construction, but will not bear the full risk of delays or cost overruns because it cannot entirely control that risk.

Allocation of functions and risks is also generally done on the basis of the same principles – that is, allocate to the party that is best placed to perform the function or manage the risk. Some PPP practitioners prefer to decide how functions are allocated based on how risks are allocated—that is, they allocate risks first and then functions.Others prefer to allocate risks and functions in parallel. These Guidelines suggest allocating functions first, then allocating risks and then verifying that the allocation of functions and risk is consistent. If inconsistent, the allocation of functions and risks would be revised to make it consistent. While these steps for allocating functions and risks is longer, it does provide a clearer approach that better suits PPP practitioners with limited experience. More experienced practitioners could follow this approach or decide to follow a different one.

To provide guidance on the allocation of function, this section is organized in four subsections – as follows:

- Section 4.1 defines what these Guidelines mean by functions and list the most common functions related to the development and implementation of infrastructure projects
- Section 4.2 lists the principles that implementing agencies should follow to allocate functions between private firms and implementing agencies
- Section 4.3 describes the steps suggested for allocating these functions, and
- Section 4.4 presents some examples

4.1 Definition

These Guidelines use the following definition for functions:

> **Definition:** *Functions means the discrete actions or groups of actions that need to be carried out for a project to be implemented*

The most common functions to develop and implement an infrastructure project are:

- **Design (D)** – field work to obtain data (for example, topographical, geological or hydrological measurements); sizing facilities and equipment; defining construction material, techniques and specifications; preparing construction-ready drawings; and preparing detailed cost estimates. Design is also referred in some cases as "engineering" work
- **Build (B)** – construction of civil works, assembly or installation of electromechanical equipment, and testing and commissioning of entire facility
- **Operate and Maintain (O)** – operation and maintenance of facilities. Can also include management and administrative functions related to the operation and maintenance of the facilities
- **Finance (F)** – raising the money to pay for the project—that is, getting cash up front from investors and lenders to buy the equipment and build the infrastructure

These functions could be combined in different ways to form commonly known BOT- PPP arrangements such as:

- **O&M** – operations and maintenance contract
- **DBO** – design, build and operate
- **DBOF** – design, build, operate and finance

These combinations of functions also have relationships with commonly used BOT-PPP terms. These four refer to a BOT-PPP in which the private firm raises capital to build or rehabilitate an asset that it has designed and that it will operate during the life of a contract. Difference in usage of these terms is historical. Concessions have generally referred to an operation that collects revenue from the public, whilst BOOTs generally refer to an operation that collects revenue from a government buyer. Also, many concessions have been used with existing assets, while BOOTs are generally used for new assets.

The above description of the functions assumes that the party that finances the project will also own (O) it. This assumption holds in most BOT-PPP projects because the ownership of the project is used as recourse or collateral to the debt raised for financing the project. The description also assumes that the ownership of the project will be transferred (T) to the implementing agency at the end of the BOT-PPP contract. There are contracts however, in which the ownership

will remain with the private firm – these types of contracts are called to as Build-Operate-Own (BOO). Several of the power plants that have been developed under contract to the National Power Corporation (NPC) are BOO contracts.

It is also possible to find projects in which the private firm will need to **rehabilitate (R)** an existing asset, rather then build a new one. That type of contract is called DROF. In other cases the private firm will need to rehabilitate and expand an existing asset. The MWSS concession contracts could be considered one of these cases. The concessionaires are required to rehabilitate and expand the existing water distribution network – this type of contract would be generally called ROT.

There are also projects in which the implementing agency finances the asset and the private firm **leases (L)** the asset from the implementing agency. An example of this could include a mass rapid transit system that is financed by DOTC with a loan from a multilateral bank and the system is designed, built, operated and leased (DBOL) by the private firm.

The term **operate** is also generally understood to also include maintenance. It is generally good practice to have the same party do both functions. There are projects in which the private firm is doing the operation and the implementing agency maintenance or vice versa, or in which the nature of the project does not require operation, but only maintenance. Toll roads are examples of projects in which the maintenance function is more significant than operations – these are generally also referred to as DBOFs.

Not all the combinations of the functions listed above can be considered BOT-PPP contracts. For example, a **design-build (DB)** contract is not a BOT-PPP because the private firm does not provide a public service or makes an asset available for the implementing agency to provide that service.

Likewise, not all **O&M** contracts are BOT-PPPs. For example, management contracts in which the private firm takes over the operation and maintenance of an existing asset, but is not required to invest in this asset, is considered a BOT-PPP because the private firm will use the asset to provide a public service. On the other hand, a contract in which maintenance of an asset is out-sourced to a private firm would not be considered a BOT- PPP.

Table 4.1 presents how some the combination of the four basic functions described above relate to common BOT-PPP arrangements. The table makes a distinction between BOT-PPPs for existing and for new assets. Within new assets it distinguishes between government and privately financed assets. Each check mark represents the function that applies to each BOT-PPP arrangement. The two smaller check marks represent functions that only apply to minor capital works.

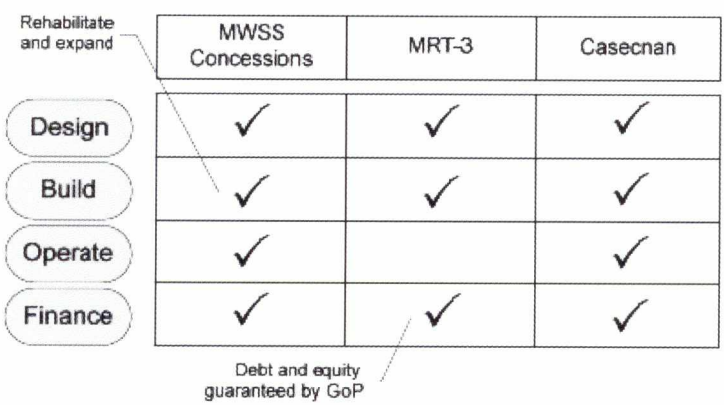
Table 4.1: Allocation of Functions for Existing and New Assets

	Existing Assets			New Assets	
	Management Contract	Lease Affermage	Concession	Government Financed - DBO(L)	Privately Financed DBOF
Design		✓	✓	✓	✓
Build		✓	✓	✓	✓
Operate	✓	✓	✓	✓	✓
Finance			✓		✓

Each of these and other combinations involve allocating different degrees of risk to the implementing agency and to the private firm. Under the first two combinations – management and lease/affermage contracts – the risks transferred to the private firm are less than those in the other three combinations. For example, on a management contract the private firm will not have capital at risk and will be paid if and when it satisfactorily provides management and operation services. In contrast, on a Design, Build, Operate and Finance (DBOF), the private firm will not only be responsible for building the facility to specifications, on time and within budget; but it will also be responsible for operating and maintaining that facility for the duration of the contract. In this case, its payment will only be made when the facility is operated and maintained according to pre-set standards.

Figure 4.1 below shows how functions have been allocated in some examples of BOT-PPP in the Philippines.

Figure 4.1: Examples of Allocation of Functions



The Metropolitan Waterworks and Sewerage System (MWSS) concessions are two contracts – one for the east zone and another for the west zone of Metro Manila – that give the right to two private firms – one for each zone – to provide water supply services to users residing in these zones. The contracts allocate to the private parties responsibility for designing, financing, rehabilitating, expanding, operating and maintaining water distribution assets in Metro Manila. The concessionaires derive their remuneration from payments made by end-users of water supplied by the concessionaires.

The Phase 1 of the Manila Metro Rail Transport Line Three project (MRT-3) involves building a 17-kilometer mass transit system running along Epifanio de los Santos Avenue (EDSA). The BOT-PPP contract for this project allocates to the private firm the functions of designing, financing and building the system. The Government 'leases' the system from the private firm, and operates and maintains the system. The private firm will transfer the system to the Government at the end of the contract.

The Casecnan Multipurpose project was developed to supply water for irrigation and to generate electricity from a hydroelectric plant. The project includes an in-stream dam, a tunnel from the dam to the Pantabangan Reservoir, a hydroelectric generation facility with a capacity of 150 MW, a switchyard, and a tailwater discharge into the Pantabangan Reservoir. The private party is responsible for the design, finance, construction, operation and maintenance of these facilities. The Government pays the private firm for water available for irrigation use, as well as for the electricity generated from the hydroelectric plant.

4.2 Principles to Follow

When deciding how to allocate functions between the private party and the implementing agency, the implementing agency should decide on the allocation that *maximizes value for money*. To reach this decision the implementing agency should decide:

- Which party is best placed to undertake these functions
- What benefits can be obtained from combining functions.

The party best placed is that which, if assigned the function, will maximize value for money on that particular function. How can implementing agencies decide which party is best placed to maximize value for money of a particular function? First, by identifying which factors affect the ability of a party to maximize value for money when undertaking a function; and second by identifying which party has most of these factors. There are many factors that could influence a party's ability to maximize value for money, but three of the most important are:

- Relevant **expertise** to perform the function – having the relevant expertise means having performed this function before in a comparable project, and having done as good or better than expected
- **Incentives** to maximize value for money when performing the function – this means having credible reasons for making choices that will reduce the cost of achieving the benefits expected from that function; or performing that function at the expected cost, but increasing the benefits expected from the function
- **Accountability** for performing the function – this means having responsibility for reporting about past or future actions and decisions with respect to performing the function, to justifying them, and to suffering consequences in the case of eventual underperformance of the function.

The implementing agency could use these and other factors to decide what specific functions are allocated to what party. Having done that, the implementing agency would need to decide if there are benefits to combining functions. For example, after considering the three factors listed above the implementing agency could conclude that the private party is best placed to design, build and operate. Based on this analysis the implementing agency might decide to have three separate contracts with the three separate private firms to undertake these functions. This might not be the arrangement that maximizes value for money.

To decide if the functions should be combined, the implementing agency should consider if combining them would lead to:

- **Minimizing life-cycle costing** – this would favor allocating the construction, operation, and/or maintenance functions to the same party
- **Maximizing innovation** – this would involve allocating to the private firm functions where their expertise and incentives could maximize the opportunities for innovation
- **Maximize asset utilization** – this would involve allocating to the private firm the function of operating an asset if the private firm can use that asset to extract other sources of revenue that maximize the utilization of the asset

Section 4.3 describes how these principles could be applied.

One function that is worth considering in more detail is the allocation of the finance (F) function. In many cases the government decides to allocate this function to the private party because the government doesn't have the funds to finance the project. This is particularly the case when governments are

going through a difficult fiscal period. This might not be a valid reason. Private financing would only be possible if the private party is able to recover the capital invested and a return on this capital from users of the services provided by the project or from the Government. That is, someone would have to pay the private party. Because someone would have to pay, the government could logically also be responsible for financing the project.

For example, a water district might decide to enter into a BOT contract with a private firm to provide bulk water supply, and might do so because it believes the water district doesn't have the ability to directly finance the bulk water treatment facility. If the water district enters into the BOT contract it will need to pay, during the life of the contract, the private firm a price per cubic meter that is sufficient to cover the cost of privately financing the project. Without this payment the BOT contract will not be viable. If on the other hand the water district goes to a bank and raises a loan to pay for the capital cost of the treatment facility, the water district will also need to pay, during the life of the loan, an amount sufficient to service the loan. This means the original reason to pursue the BOT was not a valid one.

A better reason to allocate the finance function to the private firm is to make the risk- transfer real, and so achieve accountability. If the private firm has capital at risk that could only be recovered by providing reliable treated bulk water to the water district, then the private firm would have strong incentives to deliver on its contractual obligations. The incentives would be weaker if the private firm doesn't have capital at risk. With that said, there are times when the PPP structure can create additional risk that makes private finance too expensive – that is, the private sector premium for risk-bearing is greater than the benefit to government of the private finance.

Relevant provisions of the BOT Law

The BOT Law provides for nine specific contractual arrangements or schemes that the Government and private sector can enter into for the implementation of an infrastructure or development project, and which represent several options for allocation functions between the implementing agency and the private firm. These are:

- Build-and-transfer
- Build-lease-and-transfer
- Build-operate-and-transfer
- Build-own-and-operate
- Build-transfer-and-operate
- Contract-add-and-operate

- Develop-operate-and-transfer
- Rehabilitate-operate-and-transfer
- Rehabilitate-own-and-operate

For each of these specific contractual arrangements, the law provides a definition which provides for the main obligations of the private proponent and the Government. In addition, the BOT Law allows parties to enter into other contractual schemes, subject to the approval of the President of the Philippines.

Table 4.2: BOT Law Contractual Arrangements

Scheme	Role of Private Proponent	Role of Government
Build-and-transfer (BT)	▪ Finances and constructs infrastructure or development facility ▪ Turns over ownership of facility to government after project completion	▪ Acquires ownership of facility after construction ▪ Compensates project proponent at agreed amortization schedule
Build-Lease-Transfer (BLT)	▪ Finances and constructs facility ▪ Turns over project to government after completion under lease arrangement ▪ Turns over ownership of facility to government after lease period	▪ Compensates proponent for lease of facility at agreed term and schedule ▪ Acquires ownership of facility after lease period
Build-Operate-Transfer (BOT)	▪ Undertakes financing, construction, operation and maintenance of facility for a fixed term ▪ Collects tolls, fees and other charges to recover investment plus profit ▪ Transfer ownership of facility after BOT term to government entity	▪ Provides franchise and regulates activities of BOT contractor ▪ Acquires ownership of facility at the end of BOT term ▪ May opt to share in the profits of the BOT proponent
Build-Own-Operate (BOO)	▪ Finances, constructs, owns, operates and maintains facility in perpetuity ▪ Collects tolls, fees, rentals, and other charges to recover investments and profits ▪ May assign operation and maintenance to a facility operator	▪ Provides authorization and assistance in securing approval of BOO contract ▪ Can opt to buy the output/ service provided by the BOO operator
Build-Transfer-Operate (BTO)	▪ Finances and constructs facility on a turn-key basis (assumes cost overrun, delay, specified performance risks) ▪ Transfers title of facility to implementing agency after commissioning ▪ Operates the facility for implementing agency under an agreement	▪ Assumes ownership of facility after commissioning ▪ Allows private proponent to receive compensation for the following: – Proponent's investment costs and reasonable return – Operating charges

Scheme	Role of Private Proponent	Role of Government
Contract-Add-Operate (CAO)	▪ Adds to an existing facility which the proponent is renting and operates expanded project for an agreed franchise period	▪ Collects rental payment from private proponent under agreed terms and schedule ▪ Re-acquires control over rented property/facility at the end of lease term normally including improvements thereon
Develop-Operate-Transfer (DOT)	▪ Has the right to develop adjoining property of an infrastructure to enjoy external benefits that the primary investment creates (such as higher property values or commercial development rights)	▪ May opt to share in the financial benefits of the investment ▪ Re-acquires ownership of properties turned over to investor after concession period
Rehabilitate-Operate Transfer (ROT)	▪ Takes over operation and maintenance of an existing facility for a franchise period and/or imports existing facility for refurbishing, erecting and maintaining it within the host country ▪ Transfers ownership of a facility or equipment to government after franchise period	▪ Provides franchise to ROT company ▪ May opt to share in the profits of the ROT company ▪ Re-acquires ownership of facility equipment after franchise period
Rehabilitate-Own-Operate (ROO)	▪ Takes over an existing facility to refurbish and operate with no time limitation imposed on ownership ▪ Can continue to operate the facility in perpetuity	▪ Turns over existing facility to ROO proponent, with franchise to operate ▪ May opt to share in the income of ROO company

4.3 Steps to Follow

The steps that implementing agencies can follow to allocate functions is illustrated in the diagram below and described in the text that follows.

Figure 4.2: Steps for Allocating Functions

Implementing agencies would follow four steps to allocate functions:

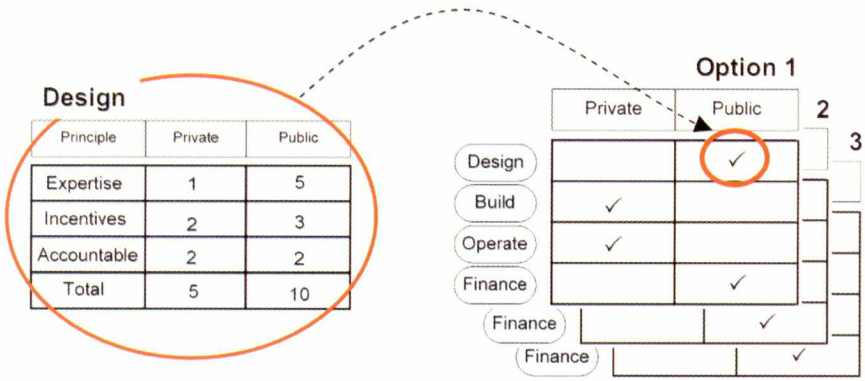
Step 1: Identify Relevant Functions

This involves using the list of functions presented above to identify those functions that are relevant to the specific project. For example, a project that involves building a treated bulk water supply facility, the functions needed to develop and implement this facility include: design, build, finance, operate and maintain, and, depending on who finances the facilities, own and transfer.

Step 2: Develop Options for Allocating Functions

The implementing agency and its advisors would develop a set of options (at least three) that represent distinct allocations of functions between the private firm and the implementing agency, and different combination of functions. A template similar to that presented in Figure 4.3 could be useful in defining these options.

Figure 4.3: Template for Developing Function Allocation Options



To develop the options, the implementing agency and its advisors will first confirm the principles that should govern this allocation. The principles suggested in section 4.2 are considered best practice and should be followed unless there is a valid reason not to do so. The implementing agency and its advisors will then develop a table for each function assessing how allocating the function to each party responds or not to the desired principle.

For example, in the case illustrated in Figure 4.3 the table of the left corresponds to the design function. Each row lists the principles that should be used to allocate that function. For each principle and party, the table shows a score – 1 means that is responds very poorly to the principle, or not at all; and 5

means that it fully responds. For example, the numbers in the table to the left of Figure 4.3 suggest that the public party has more relevant expertise in the design function than the private party. There will logically be different opinions among the members of the structuring team and the transaction advisors on how each allocation responds or not to the principles. The most prevalent opinions would be used to develop various function allocation options.

Step 3: Evaluate Options vs Objectives

The implementing agency would then analyze the extent to which each option responds to the BOT-PPP objectives and constraints identified as part of the work described in section 3.

Step 4: Choose Preferred Option

The implementing agency would then rank the options according to how they respond to the objectives and constraints. During the ranking, it is important to keep in mind the relative importance of the objectives and constraints. The first ranked option would be the preferred option. If more than one option is closely ranked, the implementing agency would keep these options in the shortlist of preferred options.

4.4 Example

This section describes how the steps described in the previous section would be applied to the mass rapid transit transaction described in appendix A.2.

The Metropolitan Transportation Authority (MTA) of the City of MyCapital is interested in implementing a new light rail line along a 17 km stretch of one of MyCapital's busiest thoroughfares. The new line is also known as the Silver Line and will be located in MyCity's densely built west side. MTA is interested in implementing the Silver Line project using a BOT-PPP for the provision of infrastructure only, since it is already leasing rolling stock for the rest of the system. Hence, the Silver Line light rail PPP project will involve the financing, designing, constructing, and maintaining of the new rail line.

The line is expected to serve a demand of about 300,000 passengers per day (ppd) at start-up and this demand is expected to reach 500,000 ppd within 10 years and stabilize at 600,000 ppd by year 15 and through the end of the concession period. The Silver Line is also expected to significantly relieve traffic congestion on the road corridor, and consequently reduce average travel time for transit users by 30 percent.

Step 1 – the relevant functions are: finance, design, construct, own, operate and maintain the facilities needed to provide mass rapid transit services.

Step 2 – identify options on allocating functions: these are presented in Table 4.3.

Table 4.3: Function Allocation Options

	Option 1 - Outsource Operations		Option 2 - DBO		Option 3 - DBOF	
	MTA	Private	MTA	Private	MTA	Private
Design	✓			✓		✓
Build	✓			✓		✓
Operate		✓		✓		✓
Finance	✓		✓			✓

Step 3 – assuming that the objectives set are to minimize life-cycle costing and maximize innovation, the table below presents a qualitative comparison of the three options presented above.

Table 4.4: Comparison of Options

	Option 1 – Outsource Operations	Option 2 – DBO	Option 3 – DBOF
Minimize life-cycle costing	2 Separation of design and operation supports does not support life-cycle costing,	4 Integration of design and operation supports life-cycle costing, but public financing could limit incentives to private party to minimize costs	3 Integration of design and operation supports life-cycle costing, but high construction risk makes private financing very costly
Maximize innovation	1 Limited space for innovation given public sector control of design	4 Creates opportunity for innovation by transferring design to private firm	5 Maximizes opportunity for innovation by transferring design to private firm and creating incentives for efficiency
Score	3	8	8

1 = worst; 5 = best; 3 = intermediate

Step 4 – based on the comparison presented above, the allocation of functions proposed under a DBO or DBOF would be most responsive to the objectives established for allocating functions. The Mayor knows that the investment needed to implement this project is quite significant and could have an important

impact on the balance sheet of the Government. On the other hand the Mayor also knows that requiring the private firm to invest capital will significantly increase their incentives to deliver good services; and that the increased cost of private financing could significantly increase the total cost of the project. After considering these options, the Mayor decides to split the financing of the project in two. The city will finance the cost of the civil works, and the private firm will finance the cost of the rest of the system. As such the preferred allocation of functions is as follows:

	MTA	Private
Design		✓
Build		✓
Operate		✓
Finance	✓	✓
	Civil Works	**Rest of system**

5 Determine Payment Method

A key component to designing a BOT-PPP arrangement is to set how the private firm will be paid for performing the functions that it will undertake. This section provides guidance to implementing agencies on how to set the payment method for the private firm. The section is organized into four subsections, as follows:

- Section 5.1 defines what these Guidelines mean by payment method
- Section 5.2 describes the principles that implementing agencies should follow to decide on the appropriate payment method
- Section 5.3 describes the steps suggested for selecting a payment method
- Section 5.4 presents one worked example on how to apply these steps to specific case.

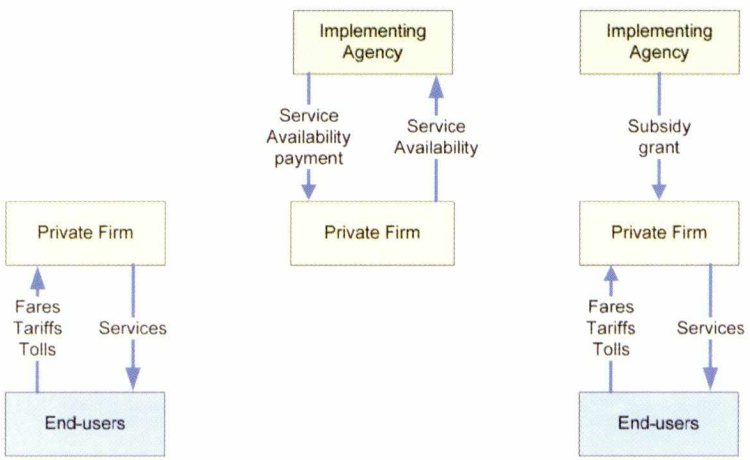
5.1 Definition

These Guidelines use the following definition for payment method in the context of a BOT-PPP arrangement:

Definition: *Payment method means who pays, how much they pay, and on the basis of what product or output the payment is made*

Three common payment methods – in which end users, government or a combination of the two pay the private firm for services provided – are presented in Figure 5.1, and described thereafter.

Figure 5.1: Common Payment Methods



End-users pay tariffs, fares or tolls

End-users pay directly for services delivered by the private firm. Under this model, these payments are intended to be enough to cover the full cost of providing the services.

Examples in the Philippines are the toll road concessions and the MWSS water concession contracts. In the toll road concessions, drivers pay tolls at defined locations along the road, usually depending on vehicle type and distance travelled. Tolls are set at a level that allows the private firm to recover the cost of building or rehabilitating the road and to cover operating and maintenance costs. In the MWSS concessions, water customers pay a tariff for the services they receive – usually a monthly fixed charge and a volumetric tariff.

Government Buyer

The Government pays directly to the private firm an amount sufficient to cover the full cost of the services provided by the private firm. This government payment could be made on the basis of services delivered by the private firm or on the basis of the private firm making an asset available. 'Government Buyer' PPPs include the power purchase agreements between NPC and independent power producers (which include capacity payments based on availability and energy payments based on electricity generated).

Internationally, the UK Private Finance Initiative (PFI) contracts – in which a government agency makes payments to a private firm based on the private firm making an asset available or providing services—are other good examples. The Research Paper 01/117 of the House of Commons in the United Kingdom "The Private Finance Initiative" describes UK PFI contracts. The paper can be found on the following link:
http://www.parliament.uk/commons/lib/research/rp2001/rp01-117.pdf

The types of infrastructure that are often thought of as inherently end-user pays (like highways) can also be done as government-pays, and these government-pays models can be done on the basis of 'availability' payments or shadow tolls. Typically, shadow toll and availability payments are in the form of a medium- to long-term concession, whereby a private contractor receives payments over time for the successful construction and operation of the facility from a public sponsor. The user is not responsible for a payment.

In the case of shadow toll roads, the amount of payment is a function of a theoretical toll rate per vehicle. Revenue minimums and maximums are set in many cases, limiting exposure to traffic risk to the operator and the government's exposure to increased subsidy. Revenues on road availability payment schemes

are generally a function of satisfactory operations, maintenance and capital reinvestment. In the shadow toll model, the road user has no price incentive to use another road.

Criteria used by governments for choosing this funding method have included more efficient project delivery and operations versus traditional means, lack of alternative free roads, political unwillingness to charge users directly, insufficient traffic for a user paid toll to be feasible and a lack of appetite in local financial markets to invest in user-paid roads. While availability payments have no traffic risk, they have other types of exposure.

Once construction is complete, satisfactory operation and maintenance (O&M) remains the primary risk in availability payment structures. Thus risk is generally seen as manageable since these costs tend to be smaller and more predictable, though financial margins can be partially eroded. Additionally, predictable and limited mandatory capital expenditures allow for more highly leveraged financial structures. As a result, high levels of unanticipated capital cost can rapidly eat into margins.

The state of Texas in the US is currently exploring the availability payment model for 87 potential toll projects, and the proposed Port of Miami toll tunnel in Florida would use the same approach. More discussion on availability payments can be found in the "Global Toll Road Rating Guidelines" produced by Fitch Ratings. These guidelines can be found on the following link: http://www.ibtta.org/files/PDFs/07%20Fitch%20Toll%20Road%20Rating%20Guidelines.pdf

Government part-payment

Under a government part-payment model, end-users pay tariffs, fares or tolls, but these are set at a level below that required for cost-recovery. The government also provides a subsidy, designed to make up the difference between revenues from end-user payments and costs. The subsidy can be designed in several different ways, as described in the box below.

Box 5.1: Subsidy Design Options

When designing the subsidy arrangements for a BOT-PPP transaction the implementing agency should consider the following questions:

- What is the policy objective that the government is trying to achieve with the subsidy?
- Who will benefit from the subsidy?
- What will be the amount of the subsidy?
- How will the subsidy be paid?

Guidance on how to think about these questions is provided below.

What policy objective?

The first step is to decide the objective the government is trying to achieve with providing a subsidy. This objective will influence how the subsidy is designed. The most common practice is to give a subsidy to provide or increase access to a public service at prices affordable to end-users. In general a subsidy would only be justified if providing the public service has a positive net economic benefit. For example, the government might decide to provide subsidies to build a mass rapid transit system in order to help passengers travel faster, whilst maintaining fares at prices that are similar to existing forms of public urban transport. The mass rapid transit system has a positive net economic benefit because the present value of the social benefits of the system – including reduction in travel time, reduction in vehicle operating and maintenance costs or reduction of environmental pollution – is greater than the present value of the economic costs of building the system.

Who will benefit from the subsidy?

The answer to this question depends on the policy objective as well as the feasibility of discriminating subsidy beneficiaries. For example, the Government of the Philippines wants to improve the reliability of the electricity supply in off-grid areas, whilst maintaining the cost of generation in these areas at a socially acceptable level. To this end, the Government introduced a subsidy scheme – Missionary Electrification Component of the Universal Charge – that is administered by the Power Assets and Liability Management Corporation (PSALM). The subsidy is provided only to off-grid areas – that is, it is not provided to on-grid areas. Within an off-grid area, all end-users receive the subsidy. As such, the price of electricity generation that an end-user pays in an off-grid area is equal to the price paid by an end-user in another off-grid area. This means that consumers are discriminated based on being off or on-grid.

Rather than setting the price at below cost-recovery levels to all end-users – similar to the off-grid generation scheme in the Philippines – the government might want to discriminate among end-users within an area. For example, if the policy objective is to benefit the poor, the government might decide to set the price at affordable levels only to those classified as poor; and at cost-recovery levels to the rest. In

this way only the poor would benefit from the subsidy. Discriminating between end-users based on wealth could be difficult in practice. Household, neighborhood or town level income data in the Philippines is generally unavailable or unreliable. Other options could be used for discriminating end-users based on proxies of wealth. Life-line blocks are used in water supply or electricity to discriminate between prices charged to low and high income end-users. For example, a water utility or its regulator could use empirical data to establish that low income consumers use on average less than 10 cubic meters per household per month. To discriminate these users, the water utility would set a tariff below cost recovery for the first 10 cubic meters per month of all consumers, and a above cost recovery tariff for all consumption above 10 cubic meters per month.

Whichever approach is selected for discriminating end-users should be cost-benefit justified. That is, the cost of implementing this discrimination should be less than the benefits of discrimination.

What will be the amount of the subsidy?

A subsidy is needed because the present value of the revenue from the fares passengers are willing to pay is less than the present value of the social benefits that the projects creates; and of the financial cost of the system. The optimal subsidy to make this system financially and therefore as a BOT-PPP is viable is the difference between the present value of the financial costs of the system and the present value of the revenue resulting from the fares passengers are willing to pay.

One option for setting the value of subsidy in a BOT-PPP is to use competition to set the level of subsidy needed to make the system financially viable. Private firms competing to be awarded a BOT-PPP contract would be asked to bid the amount of subsidy required given a price to end-users pre-set by the implementing agency. The firm requiring the lowest subsidy will be awarded the contract. We understand that is the approach proposed for the LRT-1 extension.

A similar approach was used to set the subsidy for off-grid areas. In that case bidders were asked to bid their true cost of generation on a PhP/kWh basis. The subsidy per kWh was simply calculated by subtracting the true cost rate from the socially acceptable rate set by the government.

In situations where competition is not possible, the implementing agency will need to agree on the cost of service with the private firm.

How to pay the subsidy?

The simplest approach would involve an implementing agency paying the subsidy upfront to the private firm – that is, as the capital works are being built. Under this approach however, the private firm will have less incentives to meet service provisions or asset maintenance standards over the life of the contract.

A better approach would involve converting the subsidy into an annualized amount and linking the disbursement of that amount to the private firm meeting service provision or asset maintenance standards. This approach will ensure that subsidies are only paid once service outputs are delivered – this is generally called output-based aid (OBA). Further information on output-based aid can be found on the website of the Global Partnership for Output-Based Aid (GPOBA). Some of the key advantages of OBA are:

- Increased transparency through explicit subsidies, and tying these subsides to defined outputs
- Increased accountability of service providers by paying them after they have delivered an agreed output
- Increased sustainability by linking on-going subsidies to sustainable service
- Improved monitoring of results since payments are made against agreed outputs.

As described in the website, GPOBA also provides grants for funding the work of advisors that can assist implementing agencies in designing BOT-PPP transactions that have an output-based aid component.

Setting Prices to be Paid

So far this section has discussed various approaches to paying the private firm for performing the functions that it will undertake. This sub-section discusses how to set the prices that will be paid to the private firm. It might be a good idea in some cases to let the private firm charge the prices that the market of end-users will bear. This approach works when the private firm has the incentives to set prices at levels that allow the private firm to recover the cost of providing services as well as earning a risk-adjusted return on the capital invested. These incentives exist when the private firm competes with other private firms to provide services to the same group of consumers. Competition will ensure that private firms set their prices at levels that are enough to cover their costs, but not too high to encourage customers to switch to another provider.

Competition among private firms is not possible in many infrastructure services, particularly those that use a network to provide services. These services are natural monopolies – that is, the cost of providing services with one network is lower than the cost of providing services with more than one network. Prices charged by natural monopolies are generally regulated to ensure that providers are able to recover their cost of providing service, but do not abuse their 'monopoly power'. Implementing agencies have choices on various approaches to economic regulation. The box below discusses two of the most common options.

Box 5.2: Options for Regulation of Natural Monopolies

BOT-PPP arrangements are often based on contract. This box looks at good regulatory design for contract-based BOT-PPP arrangements in which end-user are paying some or all of the cost of the services they get.

BOT-PPP arrangements can help increase efficiency, invest in infrastructure, and in general, improve service. At the same time, private providers may seek to charge tariffs above cost, skimp on investment, and provide inadequate service. Economic regulation is intended to ensure that the drive for profits leads to lower costs and better service, not higher tariffs and worse service.

There are two distinct traditions in the regulation of private sector participation in infrastructure arrangements: the French, and the Anglo-American. In the Anglo-American tradition, the private provider is regulated by an independent Government agency. This regulator controls the provider's prices and services. The regulator uses its judgment to set tariff and service standards at levels which it believes will best serve the public interest.

In the French, contract-based tradition, the service standards and prices will be stipulated in the contract. Mixing the two traditional designs can cause problems. Both traditions harness private management and capital to serve the public interest, but do so in different ways.

Around the world, BOT-PPP arrangements for water supply and toll roads have generally followed the French, contract-based model for regulation – that is, all provisions for service standards and tariffs would be set on the contract itself. The choice of a regulatory approach will need careful scrutiny, but it is fair to say that in water supply and toll roads contract-based regulation has worked relatively well.

Implementing agencies can find additional guidance on different forms of regulation on the following links:
http://www.regulationbodyofknowledge.org/
http://vle.worldbank.org/bnpp/en/publications/energy-water/explanatory-notes-key-topics-regulation-water-and-sanitation-services
http://www.ppiaf.org/content/view/64/97/

5.2 Principles to Follow

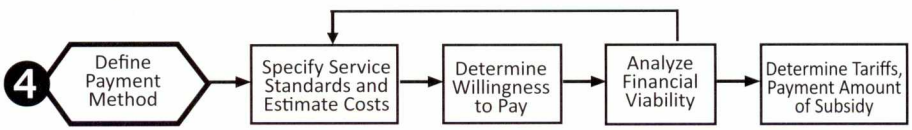
In deciding which payment method should be adopted for a BOT-PPP contract, implementing agencies can consider the following principles:

- Ensure that the private firm recovers the costs of undertaking the functions assigned to it, including the cost of bearing the risk of undertaking these functions
- When socially acceptable, set prices paid by end-users at or as close as possible to the full long-run marginal cost of providing the services they receive
- Use payment method to create strong incentives to the private firm to meet service or asset maintenance standards
- Make payment method consistent with selected risk allocation choice (as discussed in section 6).

5.3 Steps to Follow

The steps that implementing agencies can follow to set the payment method are presented in the diagram below and are described after the diagram.

Figure 5.2: Steps for Defining Payment Method



Step 1: Set Service Standards and Estimate Costs

At this stage, in the process of preparing the project, the implementing agency should have a reasonable idea of the standards or specifications that the proposed project should achieve. These standards could include quality of service standards (for example, travel time, hours of electricity supply, quality or water and so on), or asset availability specifications (for example, availability of a power plant to be dispatched or maintenance conditions of a road). The

standards or specifications would determine the capital investment and operating and maintenance costs that are needed to meet the desired level of service.

Sections 5.1 and 5.2 of the "Approaches to Private Participation in Water Services – a Toolkit" produced by the World Bank present useful guidance on how to think about setting standards and specifications and their cost implications. http://www.ppiaf.org/documents/WaterToolkit.pdf)

Most likely, initial cost estimates would be available from the feasibility studies. The implementing agency would need to, if necessary, update these estimates and adjust them to make them consistent with a more efficient implementation of the project through a BOT-PPP arrangement. This adjustment will require making a judgment on the savings that could be expected from a BOT-PPP project delivery in relation to a public sector delivery of the project. The information presented by the National PPP Forum – Benchmarking Study, Phase II "Report on the performance of PPP projects in Australia when compared with a representative sample of traditionally procured infrastructure projects" could be useful to give the implementing agency a basis for making this judgment. www.infrastructureaustralia.gov.au/publications/files/NationalPPP_Forum_Benchmarking_study_Ph2_deco8.pdf

The implementing agency will also need to make adjustments that reflect the allocation of functions as described in Section 4.

Step 2: Determine Demand for Services and Willingness to Pay

Cost of service estimates inform implementing agencies on how much it will cost to provide services that meet the given standards and specifications. The next step is to check whether there is enough demand from end-users for these services at this cost.

This demand assessment is generally done through surveys with end-users.[3] These surveys will ask end-users if they are prepared to pay a certain price for a certain type of service.

Demand assessments are one of the most critical elements of BOT-PPP transaction structuring.[4] The information from this assessment will be useful to appropriately size the facilities to meet demand, or to identify the amount of

3 Another approach to carry out this assessment is to analyze what people pay for similar service in a comparable location

4 Demand assessments might be less informative when the Government is structuring a BOT-PPP for a providing services which end-users will not pay – for example, hospitals, schools or prisons. In these cases the information on demand for these services is less critical. End-users will want to receive a service for which they don't need to pay. The decision on quantity and quality of services will be driven by how much budget is the government willing to allocate to develop the project.

subsidy needed to meet the difference between cost and tariffs.

The feasibility study of the project will generally have an indication of the expected demand for the services that the project will provide, and some assumptions or survey data on how much users of those services are willing to pay for those services. In many cases the data and assumptions are outdated and in need of updating and refinement. To this end, the implementing agency will need to engage a specialized market or demand forecasting consultant. The consultant should have extensive experience preparing or reviewing demand forecasts for the specific service that the project will provide. In large-scale projects – for example those with a total investment of more than PHP 10 billion, the implementing agency could consider retaining a second market advisor that can verify the forecasts of the first advisor. Overestimated demand forecasts can add a significant cost to the implementing agency in the long-term.

Step 3: Analyze Financial Viability

The implementing agency and its advisors will develop a financial model that will forecast the financial statements of the company that will undertake the project. The financial model will calculate the internal rate of return and net present value of the project based on the cost, demand and price information obtained from the previous two tasks. Useful guidance on how to carry out financial analysis can be found on the "Body of Knowledge on Infrastructure Regulation" developed by PPIAF. This guidance material can be found on the following weblink http://www.regulationbodyofknowledge.org/03/narrative/

If the financial model shows that the internal rate of return of the project is negative or below that of risk-comparable investments, the implementing agency will need to understand what is driving this result. One possible cause is that the project is oversized in relation to demand – that is, there is insufficient demand for the services that will be offered by the project. If there is not enough demand – that is, if not all potential end- users are willing to pay the price needed to recover the full cost of service, the implementing agency could have two options. One is to reduce the quantity or quality of service provided – and therefore cost of service – to scale-down the project to meet demand. The other option is to provide subsidies that cover the difference between tariffs acceptable to end-users and the cost of service (see Box 5.1). The paper on "A demand-driven design for irrigation in Egypt: Minimizing risks for both farmers and private investors" produced by PPIAF presents an example of how demand information and financial analysis was used to determine the right size of an irrigation system. This paper can be found on the following weblink http://www.ppiaf.org/content/view/432/485/

Step 4: Determine Tariff, Payment Amount or Subsidy

The financial analysis will provide useful information on the appropriate balance between service standards, tariffs and subsidies. To determine the appropriate tariff, government payment amount or subsidy, the implementing agency may will follow these steps:

- Set tariffs at the lowest level that end-users are willing to pay or the tariff that recovers the full cost of service – in BOT-PPPs in which end-users are not paying, the tariff that the government will be paying may be set at a level that is sufficient to cover the full cost of service
- Set subsidy, if any, to cover difference between tariff and the full cost of service.

The full cost of service, tariff that consumers are willing to pay, and subsidy will be initially estimated using the financial model of the project. Competition for the award of the BOT-PPP could be used to reveal better information on costs, and therefore to fine tune the tariff, or the full cost of service, or the subsidy.

5.4 Example

This section illustrates how to work out the payment method, using a mass transit system example described in appendix A.2.

The Metropolitan Transportation Authority (MTA) of the City of MyCapital is interested in implementing a new light rail line along a 17 km stretch of one of MyCapital's busiest thoroughfares. The new line is also known as the Silver Line and will be located in MyCity's densely built west side. MTA is interested in implementing the Silver Line project using a BOT-PPP for the provision of infrastructure only, since it is already leasing rolling stock for the rest of the system. Hence, the Silver Line light rail PPP project will involve the financing, designing, constructing, and maintaining of the new rail line.

The line is expected to serve a demand of about 300,000 passengers per day (ppd) at start-up and this demand is expected to reach 500,000 ppd within 10 years and stabilize at 600,000 ppd by year 15 and through the end of the concession period. The Silver Line is also expected to significantly relieve traffic congestion on the road corridor, and consequently reduce average travel time for transit users by 30 percent.

Step 1 – the mass rapid transit system (light rail) needs to meet the following standards:

- Minimum capacity: 600,000 passengers per day
- Minimum travel speed: 50 miles/hour

Civil works are estimated to cost US$750 million dollars. Operating and maintenance costs for the infrastructure were estimated at US$10 million in year one of operations and increasing based on exchange rate, inflation, electricity prices.

The allocation of functions analysis suggested the following allocation.

	MTA	Private
Design		✓
Build		✓
Operate		✓
Finance	✓	✓
	Civil Works	Rest of system

Step 2 – a model developed by an independent consultant forecasted the following demand

Year	Passengers per year (million)
2011	108
2012	114
2013	120
2014	128
2015	135
2016	144
2017	150
2018	160
2019	170
2020	175
2021	180
2022	190
2023	198
2024	212
2025	216
2022 - 2031	216

This ridership forecast was developed using a transport model and a field survey. Interviewees were informed that the proposed fare per passenger per trip was PhP 25. A second consultant was retained by MTA to review these ridership estimates. This consultant was of the opinion that, although the forecast was

developed using a sound process and model, the forecasts should be adjusted downwards by 25 percent during the first five years in response to evidence of several Greenfield mass rapid transit systems in which actual demand during the first five years had been less than forecasted.

Step 3 – a financial model was developed to forecast the financial statements of the private company that will develop the mass rapid transit system. The model assumed that all capital works would be financed by the Government using a loan from a multilateral development bank, and that the rolling stock, signaling, control and other equipment would be financed by the private firm. Initially the model assumed that the private firm will pay MTA the amounts needed to service the debt from the multilateral. The first run of the model showed that with a fare of PhP 25 per passenger per trip and the downward adjusted ridership, the project will get a negative IRR – that is, the project was not financially viable. After attempting to run various scenarios of reducing system capacity and analyzing the impact on costs, ridership and IRR, the implementing agency decided that it will keep the originally specifications (alignment, capacity and travel time) of the system and pay a subsidy that will make the project financially viable.

Step 4 – the private firm will receive part of its payment from fares charged to passengers, and the rest from a subsidy from the Government. The implementation agency ran once again the financial model to determine the amount of the subsidy that will make the project financial viable. It found that the fares paid by passengers are sufficient to cover all operating and maintenance costs, all capital cost of purchasing and financing rolling stock, signaling and all other equipment, and part of the cost of building and financing the civil works. Based on this finding the implementation agency decided to adopt the payment method illustrated in Figure 5.3.

Figure 5.3: Payment Method

Under this method the private firm will charge passengers a fare of PhP 25 per passenger per trip and will pay MTA a concession fee equal to the difference between the full cost of the system and the revenue from passengers. MTA will use the concession fee and its own resources to pay back the loan from the multilateral bank to finance civil works.

To maximize the amount of the concession fee that the BOT-PPP contract will be awarded using a competitive selection process and the firm offering the highest concession fee will be awarded the contract.

6 Allocate Risks

As discussed in Section 4, most functions have a set of risks associated with them. Once the project functions have been allocated and a payment method determined, the next step is to decide how project risks should be allocated. Risks may be allocated to the private party or retained by the implementing agency. Some risks can also be transferred to users of the service, or to third parties such as insurance providers. Allocating risk efficiently is a key part of achieving value for money by implementing a project such as a BOT or PPP. This section provides guidance to implementing agencies on how to make this allocation.

The risk allocation that results from this process should then be verified for consistency with the allocation of functions. If inconsistent, the allocations of functions and risks should be revised so they are consistent.

This section is organized in four subsections, as follows:

- Section 6.1 defines what these Guidelines mean by risk and describes key risk concepts related to the development and implementation of infrastructure projects
- Section 6.2 lists the principles that implementing agencies should follow to allocate risks between private firms and implementing agencies
- Section 6.3 describes the steps suggested for allocating risks
- Section 6.4 presents some examples.

6.1 Definitions

To allocate risk we first have to understand risk in the context of infrastructure PPPs. The efficient allocation of risk – that is, allocation according to the principles described in Section 6.2 below – is one of the primary reasons why BOT-PPP projects can achieve value for money in the provision of infrastructure. Hence, these Guidelines use the following definitions for risk and risk allocation:

Definitions:

Risk *is the possibility of deviation in the actual project outcome – that is, the benefits and costs accruing to each party with an interest in the project – from the expected, or*

5 Many researchers distinguish between risk and uncertainty after Frank Knight's work (1921). Risk in Knight's sense exists when the probabilities of different outcomes are susceptible of measurement, and uncertainty exists when they are not. As Irwin (2007) points out, in most real cases probabilities are unknown, and yet people can always assign a subjective probability, and makes the case that the distinction may not matter in practice. Following Irwin's convention, we use the term risk to refer to both Knightian risk and Knightian uncertainty.

most likely outcome.[5] *Risk can include the possibility of unexpectedly good, as well as unexpectedly bad, outcomes.*

Risk allocation in a PPP project is the process of determining which risks should be allocated to the private firm, which risks should be retained by an implementing agency, and which risks should be shared in a defined way or transferred to a third party, to achieve better value for money.

The notion of value for money and other key risk concepts used or applied throughout these Guidelines are defined in Table 6.1 below.

Table 6.1: Definition of Key Risk Concepts

Concept	Definition
Value for Money	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. Value for money is not a selection based on the lowest cost bid. For additional guidance on assessing Value for Money use the following link: http://www.hm-treasury.gov.uk/d/vfm_assessmentguidance061006opt.pdf.
Total project risk	Total project risk is the possibility of unpredictable variation in the total value of the project, taking account not only of the value of the project company but also of the value accruing to customers, the government, and other stakeholders.
Risk event	A risk event is an event whose occurrence affects total project value—this could be a particular outcome of a continuous variable that is different from its expected value, such as the exchange rate, or a one-off event, such as an earthquake
Risk type	A particular risk type is the possibility of variation in project outcome arising from the occurrence of a particular risk event. Table 6-2 lists various types of risks faced by BOT-PPP projects—examples include demand risk, or natural disaster risk.
Materialize	A risk materializes when a risk event occurs, with a consequent impact on the project outcome.
Probability of loss, or likelihood of risk event	Measure of how likely it is that a certain risk event will occur. It is often expressed as a percentage, but it may also be expressed qualitatively (for example, rare, unlikely, possible, likely or almost certain)
Value or severity of loss (if event happens)	The size of the loss associated with a specific risk event, regardless of the event's probability of occurrence. Again, this can be expressed either quantitatively (as a cost), or qualitatively, relative to the other project risks (for example, insignificant, minor, moderate, major or extreme)
Expected value of loss, or expected cost of risk	The size of the loss associated with a specific risk event, times the event's probability of occurrence.
Risk management	A continuous process for systematically identifying, analyzing, controlling, mitigating and monitoring risk throughout the life cycle of a project using a cost-benefit justified strategy.

Sources: Castalia, H.M. Treasury (UK), Irwin (2007)

6.1.1 Categorizing Project Risks

Risks in a PPP infrastructure project are usually identified by reference to different project phases and/or risk categories. Typical PPP project phases are:

- Bid phase
- Negotiation with preferred bidders
- Construction phase
- Operational phase
- Transfer of asset

Risks may materialize in each and every project phase. The risks that project parties may face during the first two project phases are generally process-related. Since these phases occur prior to contract signature, the associated risks cannot be handled in the contract. Implementing agencies should nonetheless consider, and where possible mitigate, their exposure to these risks. Risks that occur after contract signature (that is, after negotiations with the preferred bidder are concluded) can be handled in the contract.Deciding how to handle these risks – along with allocating functions – is the essence of PPP structuring.

These Guidelines use eleven generic risk categories to classify PPP project risks. Each risk category may apply to a particular project phase, or across several project phases. These risk categories form the basis for risk allocation and are defined and illustrated in Table 6-2.

Table 6.2: Risk Categories for BOT-PPP Projects

Risk	Definition	Example(s)	Comment on Nature of Risk
Pre-contract risks	The risk that the procurement process will experience any of the following: (a) failure to attract sufficient qualified bidders and/or responsive offers; or (b) prolonged and expensive negotiations; or (c) collapse of negotiations.	Risk that an international procurement process for a LRT BOT project fails to attract qualified bidders because of poor project opportunity marketing and/or poorly prepared bidding documents	Pre-contract risks are often associated with poor project preparation, which may result from lack of implementing agency experience or capacity. These risks can be mitigated by careful transaction preparation and management. This includes establishing a competent transaction team, hiring experienced transaction advisors and setting a schedule commensurate with project complexity.
Site Risk	The risk that the project land will be unavailable or unable to be used at the required time, in the manner or at the cost anticipated, or that the site will generate unanticipated liabilities, with the result that the contracted service delivery and/or projected revenues are adversely affected	▪ Risk of delays in acquiring the right of way for a toll road because of legal, title, or resettlement-related difficulties ▪ Risk that the geological composition of a tunnel site will vary significantly with tunnel depth, and result in higher construction costs ▪ Risk that during construction of a dam, important archaeological remains are found, preventing or delaying construction completion	▪ Site risk encompasses all risks to do with land required for the project, including site suitability, problems in acquiring land, environmental liabilities and requirements for planning and other approvals. ▪ Site risk is greatest during project inception and construction. Its importance decreases in the operational phase. However, environmental risk may materialize during the operational phase if previously unidentified problems come to light, or the project operation itself pollutes or contaminates the area.
Design, construction and commissioning risk	Risk that the design, construction or commissioning (start-up) of the facility are carried out in a way which results in cost overruns (in the design, construction, or operations), and/or poor service delivery.	▪ Design risk – risk that the baggage handling system at a privately operated airport is poorly designed, resulting in lost, misrouted or delayed baggage, and the consequent user dissatisfaction ▪ Construction risk – risk that the pavement sub-base on a road is not compacted to specifications, resulting in early pavement failure ▪ Commissioning risk – risk that a new wastewater treatment technology will not work and that the treatment plant will not operate to the specified performance standards	▪ The consequences if design, construction or commissioning risks materialize may include delays and/or cost increases in those project phases. Consequences may also include design or construction flaws which render the infrastructure inadequate for effective service delivery, either immediately or over time. ▪ These are the core risks of the development phase and are among the most likely risks to materialize.

Risk	Definition	Example(s)	Comment on Nature of Risk
Sponsor and financial risk	Sponsor risk is the risk that: ▪ Where the Special Purpose Vehicle (SPV) created by the private partners to contract with the government is unable to fulfill its contractual obligations, government will be unable to enforce those obligations, or recover compensation or remedy from the sponsors for loss sustained as a result of the SPV's breach ▪ The private partner(s) is, for security or other probity reasons, inappropriate or unsuitable to be involved in, or connected with, the delivery of a project, and in so being may harm the project.	Sponsor risk – risk that a the private partner SPV goes bankrupt and is dissolved only after 25 percent of the construction works have been executed, and that the compensation available from performance bonds is insufficient to cover remaining construction costs, not to mention the associated delays and court costs	Sponsor risk can be difficult to assess prior to the start of the project. Since the SPV is a legal entity created to act on behalf of the project consortium, the SPV itself has no historical financial or operating record which government can assess. The government must therefore rely on the historical performance of the consortium members to assess the ability of the SPV to fulfill the project obligations.
	Financial risk is the risk that investors and lenders will not provide or continue to provide funding to the project ▪ Financial parameters (such as interest rates, tax rates) will change prior to the private firm fully committing to the project, potentially adversely affecting price ▪ The financial structure of the project is not sufficiently robust, meaning the project is vulnerable to financial risk factor shocks during the project, such as interest or tax rate changes	Financial risk – risk that a private party that has financed a project with a very high proportion of debt faces bankruptcy due to a sudden change in interest rates	The SPV is supported by a complex web of financial arrangements (including investors and lenders who rely on the project's ability to provide a return on investment), which are subject to conditions that must be fulfilled before financing can be drawn down. Good practice in contract design is to make financial closure a condition precedent to contract effectiveness and to have a date by which financial closure needs to be reached as a bid bond is called. To minimize risk of bankruptcy, some contracts set maximum debt to equity ratios.

Risk	Definition	Example(s)	Comment on Nature of Risk
Operating risk	The risk that the process for delivering the contracted service or facility function will be adversely affected in a way which prevents the private firm from delivering the contracted services or facility function according to the agreed specifications and/or within the projected costs	Risk that a privately operated LRT system relies on a local supplier for spare wheels, for which quality decreases. Wheels crack early on and have to be replaced twice as often, resulting in incidents, higher maintenance costs, and reduced profits	▪ Operating risks typically relate to production and functioning, availability and quality of inputs, quality and efficiency of management and operation, maintenance and upgrade requirements. ▪ The consequences of operating risks materializing are that the costs of running the facility exceed projections and therefore diminish projected returns and/or that the facility will not perform to the required standards.
Demand risk	The risk that the demand for a service or the use of a facility will vary from forecast levels, generating less revenue from users than expected.	Risk that, under a transit system where the compensation mechanism to the private partner is a function of ridership demand, actual ridership is well below the forecast, resulting in a significant loss to the private partner.	Demand risk arises in the operating phase of the project when the contracted services or facility are offered to the end-user. This end user may be the Government (for example, a hospital or school project), government on behalf of consumers (for example, water treatment plants), or the public directly (for example, a road or mass transit). Wherever payment for service is volume-based and therefore depends on the level of usage, the project is exposed to market forces and their inherent risks.
Network and interface risk	Network risk is the risk that the network(s) needed for the private partner(s) to deliver the contracted service or facility functions will be removed, not adequately maintained or otherwise changed in a way that: (a) hampers the delivery of the contracted services or facility function; (b) affects the quality of the specified outputs; or (c) affects the viability of the project.	▪ Network risk—risk that a privately operated LRT line in an LRT network relies in a second line (publicly or privately operated) for passenger transfer, and the service in the second line is poor or unsynchronized with the first one, affecting performance and demand ▪ Interface risk—risk that a telecoms PPP plans to transmit data traffic on a government agency's internal network, but the agency changes the configuration of its network after the contract is signed	▪ Network and interface risks relate to the points of intersection between the project infrastructure or services and other privately or government-controlled networks or services. These risks have unique characteristics for each different project, and therefore require some flexibility in applying the principles of risk allocation. ▪ Network risk arises where the contracted services or facility function are linked to, depend on or are otherwise affected by certain other infrastructure, inputs and services (collectively referred to as a network) ▪ Interface risk occurs where a private partner(s) and government both provide services from within or in relation to the same infrastructure facility

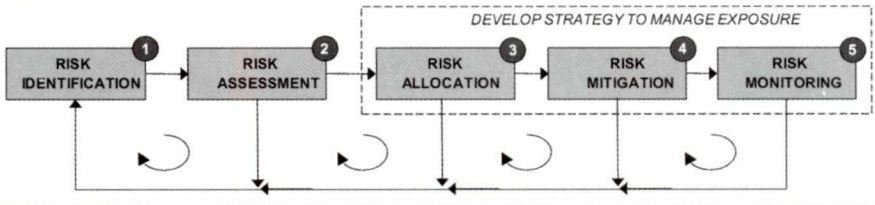
Risk	Definition	Example(s)	Comment on Nature of Risk
Industrial relations risk	The risk of any form of industrial action (for example, strikes, lockouts, work bans, work-to-rules, blockades, go-slow action, etc.) occurring in a way which, directly or indirectly, negatively affects commissioning, service delivery or the viability of the project.	A labor strike that causes delays in obtaining supplies, construction, and/or in service delivery, leading to increased costs, reduced or lost revenue to the private partner, and possibly a contractual liability to pay liquidated damages to government.	Industrial relations risk may realize in both construction and operational phases of the project, but is usually highest during construction.
Legislative and government policy risk	Risk that the government will exercise its powers and immunities (including but not limited to the power to legislate and determine policy), in a way that adversely impacts the project.	▪ Risk that the implementing agency will not have the power to enter the contract or its ability to do so will be limited ▪ Risk that Government will be immune from legal action (sovereign risk) ▪ Risk that Government will use its power to propose or alter legislation, in a way that adversely impacts the project ▪ Risk that relevant government actors will grant or refuse to grant statutory consents in a way that adversely impacts the project ▪ Risk that Government will adopt or change policy in a way that impacts the project's operation or alters the relationship between the project and competing public infrastructure ▪ Risk that statutory regulators will exercise their powers to adversely affect the project ▪ Risk that Government will require changes in service specifications or will interfere with the private partner's business operation in a way that adversely impacts the project.	The election of a new government may increase the risk of changes in legislation or of changes in government policy, or willingness to honor the contract. These are some of the most critical factors that the private sector considers when entering a PPP.

Risk	Definition	Example(s)	Comment on Nature of Risk
Force majeure risk	Risk that a specified event, entirely outside the control of either party, will occur and will result in a delay or default by the private firm in the performance of its contractual obligations. *Force majeure* events traditionally fall into two categories: acts of God and political events.	▪ Acts of God – risk of storms, lightning, cyclones, earthquakes, natural disasters, actions of the elements, tidal waves, floods, droughts, landslides, mudslides and nuclear, chemical and biological contamination ▪ Political Events – risk of civil riots, rebellions, revolutions, terrorism, civil commotion, insurrections and military and usurped power, malicious damage, acts of a public enemy and war (declared and undeclared)	▪ *Force majeure* events can be divided into those that can be insured, or foreseen and mitigated against by taking reasonable care, and those that cannot. These "insurable" and "uninsurable" *force majeure* risks are typically handled differently in a BOT-PPP agreement. ▪ The events that could be insured or mitigated may vary by project. Individual contracts must therefore expressly define events that will constitute insurable or uninsurable *force majeure* events, even where the starting point is apparently very broad.
Asset ownership	Risk that events such as technological change, construction of competing facilities or premature obsolescence will occur, with the result that the economic value of the asset may vary, either during or at the end of the contract term, from the value upon which the financial structure of the project is based.	▪ Risks that half-way during the contract term because of technological changes, the 32-bit servers of a privately operated centralized database of intellectual property records cannot run a new or updated version of the database software which requires 64-bit machines ▪ Risk that at the end of the concession period for the same intellectual property records IT project, the entire system has to be replaced, rendering it of null residual value to the government	In accordance with the "whole of life" principle, the premise in these guidelines is that these risks are to be allocated to the private partner. However, this risk allocation may need to be adjusted for individual projects, depending on government requirements for the particular site and/or the facility and the plan for its operation at the end of the contract term. If Government decides at the outset that it needs the site and/or facility – whether because the asset is an integral part of a public network, is integrated with other government operations, is critical for Government's own service delivery or simply to preserve a strategic site– it must ensure that the project structure delivers it into government hands at an appropriate point, at an acceptable price and in an acceptable condition. If the facility is to revert to, or to be transferred to government at the end of the contract term, the Government is potentially exposed to residual value risk.

6.1.2 Managing Risk

Risk allocation is an integral part of a broader risk management process, as illustrated in Figure 6.1. This risk management process comprises five, inter-dependent steps: (1) identification; (2) assessment (quantification or measurement); (3) allocation; (4) mitigation; and (5) monitoring. In general terms, the first two steps identify exposure to risks, while the last three manage that exposure. This broad risk management process (or its variants) is applied by many different types of organization to manage many different types of risk. Box 6.1 below defines and briefly explains each of these steps in the context of BOT-PPP projects in infrastructure.

Figure 6.1: Risk Management Process



This section of these Guidelines—entitled "allocating risks"—in fact addresses several steps of this risk management process. When structuring a BOT-PPP, the implementing agency needs to identify, assess and allocate project risks. It also needs to develop cost-benefit strategies for mitigating and monitoring those risks—in particular the risks that the government will bear under the proposed contract. Sections 6.2 and 6.3 describe the principles and steps that implementing agencies should follow in doing so.

Each of these steps is defined and explained in further detail in the box below.

Box 6.1: Risk Management Process Definitions

The risk management process consists of the following five steps:

Step 1: Risk Identification

The first step in risk management is to identify potential risks. There are two common approaches to identifying project risks during the project structuring process:

- *Comparison with risk checklists* — risk checklists are lists of risks that typically apply to PPP infrastructure projects. Checklists may be general or sector-specific.

- *Using expert knowledge* — Experts in each aspect of a project (such as experts in civil construction works, installation and operation of electromechanical equipment, law, regulation or financing) can be consulted to help identify project risks.

These approaches are not mutually exclusive. Using a general checklist cannot substitute for detailed consideration of the risks of a particular project by experts. Conversely, the risk checklist can be used to inform and structure brainstorming by relevant experts.

Step 2: Risk Assessment

The next step after risks have been identified is to assess the nature of each identified risk. In particular, the likelihood of occurrence and severity of loss of risk events should be estimated to give a measure of overall risk importance—whether by quantitative or qualitative measures, or a combination of the two.

This information helps inform risk allocation and management. Firstly, understanding the possible cost of a risk helps prioritize risk allocation and management effort. The size and nature of the possible cost could also affect each party's willingness to accept a risk.

Step 3: Risk Allocation

Allocating project risk means apportioning responsibility for bearing the costs, or benefits, that result from each identified project risk materializing. Risks in a PPP project may be allocated to one of the parties to the PPP contract, or shared between those parties. Some risks may also be transferred to third parties, such as the users of the service.

This allocation is achieved in the PPP contract, by including terms that define who will bear each risk and by what mechanism. Mechanisms by which the government and private parties to the contract can bear risk include minimum purchase agreements, guarantees (such as minimum traffic guarantees or exchange rate guarantees), defined compensation mechanisms and performance bonds. Mechanisms by which risk can be contractually transferred to service users include indexation of prices or tolls to risk factors.

BOT-PPP project risks are usually allocated with the aim of ensuring the project provides value for money. The principles by which risks should be allocated to achieve this aim are discussed in detail in Section 6.2.

Step 4: Risk Mitigation

Risk mitigation is the taking of positive actions by a party to improve their ability (or reduce their cost) to control, anticipate and respond to,

or absorb the risk. Risk mitigation strategies could include, but are not limited to:

- *Reducing the level of uncertainty around key variables.* For example, undertaking detailed geological surveys before constructing a tunnel to enable better design and construction planning, and reduce the severity and likelihood cost overruns
- *Passing risks through to third parties who can control them at a lower cost.* This creates a chain of risk bearers, each best placed to control the particular risk. The contracting party still retains primary liability, but is able to control the risk at a lower cost by passing it on through sub-contracts. For example, a private firm could contract with a builder who would bear construction risks, and a facility operator who would bear operating risks
- *Using financial market instruments.* The cost of bearing inflation, interest rates and foreign exchange rate risks could be offset by using financial market (hedging) instruments
- *Passing risks on to consumers through higher prices.* If the level or allowed change in user charges is not specified in the contract, cost resulting from the materialization of risks could be passed on to project users by increasing these charges
- *Diversification of project portfolios.* A buffer against the effects of a risk materializing can be developed through a diversified project portfolio (see definitions in Table 6.1).

Sometimes risk mitigation requires contributions from both parties—for example, the private party could undertake detailed studies to reduce construction cost uncertainty, but the implementing agency must allow them time to do so as part of the contract agreement.

Risk mitigation is a fundamental consideration in risk allocation, because an ability to mitigate a particular risk may lead a party to accept a risk it would otherwise not accept.

Likewise, knowledge of the mitigation options available to the other party might make it appropriate to insist on the risk being allocated to that party or paying a smaller premium.

This means possible mitigation strategies open to each party should be identified as part of the risk allocation process. Once risks have been allocated, implementing agencies also need to develop their own cost-benefit justified risk mitigation strategies.

Step 5: Risk Monitoring

After risks have been allocated and a contract with a private partner has been signed, the implementing agency needs to establish a risk

monitoring process. This typically involves tracking risk factors and other possible indicators of the likelihood of occurrence and potential severity of risk events.

Risk monitoring is important to continually re-assess exposure to each identified risk, and to adjust risk mitigation plans accordingly. For example, if a risk event is becoming more likely to occur, it may be worth taking more action to mitigate the effect of that risk event.

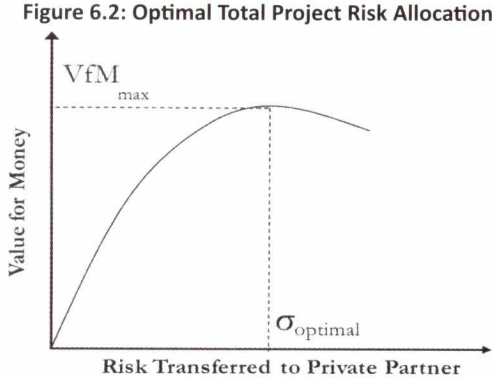
Risk monitoring also helps identify – and therefore to assess, allocate if necessary, and mitigate – new, unforeseen risks that emerge during project implementation.

6.2 Principles to Follow

PPPs are about achieving value for money by transferring or allocating project risks traditionally borne by the public sector to a private partner. Where this private partner is better able than the government to mitigate or absorb the risk, this risk transfer can reduce the overall cost of risk in the project, and improve value for money.

Optimal risk allocation is therefore the apportionment of risk between public and private parties to a PPP contract (and third parties such as service users) that minimizes the total cost of risk bearing to the project, maximizing value for money. This is very different from maximum risk transfer to the private sector, a common misperception about PPPs that implementing agencies should avoid. A private party will ultimately charge the cost of risk bearing to the buyer of the service (that is, the government or users). There would be no value for money in paying the private party for bearing a risk that another party (the government or an insurance company) could bear at a lower cost. The concept of optimal project risk allocation is illustrated in Figure 6-2.

Figure 6.2: Optimal Total Project Risk Allocation



Source: Organization for Economic Co-operation and Development. "Public-Private Partnerships: In Pursuit of Risk Sharing and Value for Money". June 2008.

Section 6.2.1 describes the principles by which risk should be allocated to achieve this optimal risk allocation. Section 6.2.2 then presents a generic risk allocation matrix, providing guidance to implementing agencies on how these principles should be applied in practice.

6.2.1 Key principles for allocating risks

To achieve optimal risk allocation, each identified risk should be allocated to the party that is:

- Best able to control the likelihood of the risk event occurring
- Best able to control the impact of the risk on project outcomes – for example, by anticipating the risk event or by reducing its potential cost
- Able to absorb the risk at lowest cost[6].

These principles are described in turn below. In general, the three principles for allocating risk are followed from top to bottom – that is, a risk is allocated to the party best able to absorb it only if the likelihood and impact of the risk cannot be controlled by any party. However, this is not always the case – these principles may sometimes need to be traded off against each other to maximize overall value for money, as described in Box 6.2.

To these three risk allocation principles, we can add a fourth that applies to risk management more generally, and by extension is important to take into consideration when allocating risk:

- Risk mitigation strategies should be cost-benefit justified

This fourth principle is also discussed in this subsection.

Principle 1: Allocate risk to the party best able to control the likelihood of the risk event occurring

This principle says that a risk should be allocated to the party that has most influence over it – so that party bears the cost of the risk if it turns out badly, or gets the benefit if it turns out well. This gives that party the incentive to invest the appropriate amount of effort and resources in minimizing the likelihood of the risk event occurring, reducing the overall level of project risk and increasing value for money.

The ability to control a risk is often associated with a function that is also allocated within the contract, as described in Section 4. This means that functions and associated risks should be allocated together. For example, a private contractor may be responsible for detailed project design and construction. In that case, that contractor is best able to control most elements of construction costs

6 Following Irwin, Timothy C. Government Guarantees: Allocating and Valuing Risk in Privately Financed Infrastructure Projects. Washington, D.C.: The World Bank. 2007

through its choice of materials and construction techniques and its effectiveness at managing the construction process.

The private contractor may also be better-placed to make these decisions because of its greater expertise and experience in design and construction. This suggests the private party should bear most of the risk of construction cost over-runs.

On the other hand, the government party to the contract is usually better-placed to control the behavior of a Government-owned regulator. Contracts often therefore include compensation mechanisms should the regulated tariff not be allowed to follow a specified path – such as in the toll road concessions in the Philippines.

Principle 2: Allocate risk to the party best able to control the impact of the risk on project outcomes

Even where a risk cannot be controlled, one party may be better-placed to control the impact of the risk on project outcome, by assessing or anticipating and responding to the risk factor. Allocating risk to this party reduces the overall level of project risk and increases value for money.

Again, the ability to respond to a risk factor may be determined by the allocation of project functions, suggesting the allocation of functions and risks should be consistent. For example, while no party can control the risk of an earthquake, if the private firm is responsible for project design and construction, it could choose to use techniques to reduce the damage should an earthquake occur.

Another example is the ability of each party (public or private) to assess or anticipate project demand. Even if no party can control demand, allocating demand risk to the party better able to assess it – along with the project design function – would encourage better decisions about optimum project size.

Principle 3: Allocate risk to the party able to absorb the risk at lowest cost

The cost and likelihood of most risks can at best be only partly controlled; some cannot be controlled at all. In these cases, the remaining risk should be allocated to the party able to absorb that risk at lowest cost. Unlike the other principles, this does not lower the overall level of project risk, but it does lower the overall cost of bearing that risk, and so improves value for money. A party's cost of absorbing a risk depends on:

- The extent to which the risk is correlated with the party's other assets and liabilities – in other words, the more diversified those assets and liabilities are, the lower the cost of risk bearing. For example, demand for infrastructure services like toll roads or electricity may depend on

the strength of the local economy, as does the government's tax revenue. If the private party is an international investor, their cost of bearing demand risk may be lower. Private insurers specialize in diversifying particular types of risks, so risks for which private insurance policies are readily available should usually be ultimately allocated to a private insurer

- The ability of and cost to the party of passing the risk on to others – for example, if prices are not specified in the contract but are controlled by one of the parties, that party would be able to absorb some risks by passing on some or all of the associated cost increases on to the users of the service. Alternatively, private firms may be more practiced at buying derivatives to protect it from changes in fuel prices. This can also be thought of as the ability of the party to improve the diversification of its assets and liabilities
- The ability of the party to spread risk among other, ultimate risk bearers – that is, the lenders or shareholders (for a private firm) or taxpayers (for a government). The ability of governments to spread risk among all taxpayers means they are often viewed as having a lower cost of risk-bearing than most private firms

The extent to which the party will tolerate risk – that is, the degree of the party's risk aversion. For example, low income users of a service may be more risk averse than the average taxpayer, or average private firm shareholder.

The private party's cost of risk-bearing is captured in the higher return – or risk premium – demanded by that party for taking on a riskier project. These risk premiums are determined in investment markets, by investors (shareholders or lenders) comparing the opportunity to other possible investments. The government's cost of risk-bearing is more difficult to quantify directly, which can result in implementing agencies accepting too much project risk.

Box 6.2: Trade-Offs Between Risk Allocation Principles

In general, the three principles for allocating risk are followed from top to bottom – that is, a risk is allocated to the party best able to absorb it only if the likelihood and impact of the risk cannot be controlled by any party. However, this is not always the case. For example, if one party is somewhat better able to control the likelihood of a risk event occurring but has a much higher cost of absorbing the risk than a second party, the risk allocation that maximizes value for money may be for the second party to bear the risk, or for the risk to be shared between parties.

This trade-off can justify contractual provisions like termination payments. For example, if the project fails the government might limit the private consortium losses at 20 percent of the asset value by giving an 80 percent termination payment in the event of contractor default. The private consortium is generally better able to control and anticipate the risk of project failure than the government. However, its cost of absorbing that risk may be high, unless it consists only of international companies with a very large portfolio of projects.

This means the risk premium the private consortium would add to the project cost for bearing the full risk of project failure could be higher than the total cost of risk-bearing, if the Government shares the default risk through a termination payment clause.

Principle 4: Risk mitigation strategies should be cost-benefit justified

As described in Box 6.1, risk mitigation strategies are ways in which parties can improve their ability or reduce their cost of controlling, responding to or absorbing a risk. These could include undertaking various studies to better understand and reduce the variability in costs, or using hedge instruments to make financial risks less costly to absorb. Understanding the availability of risk mitigation strategies to each party is an important consideration in risk allocation. Once risks have been allocated, implementing agencies also need to develop their plan for mitigating project risks—in particular, the risks they will accept under the proposed structure.

This principle says the benefits of any risk mitigation strategy, measured in terms of avoiding future losses, should exceed the costs of the strategy. Understanding the expected losses of a risk event is therefore important for defining how much cost should be incurred in managing that risk. In the example of conducting a detailed geological survey before constructing a tunnel to reduce the risk of construction cost overruns, the survey would only be justified if the reduction in expected loss from the risk is greater than the cost of the study.

6.2.2 Generic risk allocation matrix

These principles have been brought together in the generic risk allocation matrix that describes the preferred allocation of PPP infrastructure project risks in general, along with the rationale for the generic preferred risk allocation position. Box 6.3 describes this risk allocation matrix, which is presented in Table 6.3 below. The preferred allocation of risks described in the generic matrix should be considered by implementing agencies as an integral part of the risk allocation principles, and as a reference when allocating risks.

Box 6.3: The Generic Preferred Risk Allocation Matrix – A Description

The generic risk allocation matrix consists of six columns and eleven groups of rows (one group for each risk category). The information in the columns has two main purposes:

To define the preferred allocation for each specific project risk; and

To describe the rationale for the preferred risk allocation and the type of analysis that agencies will have to develop, should they decide to propose an alternate risk allocation structure.

The columns in the matrix are:

- *Risk:* States the risk in question.
- *Definition:* Defines the risk in more detail.
- *Preferred Allocation:* States the preferred government allocation of the risk as one of three choices: (i) private partner; (ii) government; and (iii) shared
- *Rationale:* Describes the basis or justification for the government's preferred allocation.
- *Possible Mitigation Strategies:* Describes measures that could be taken to mitigate or reduce the risk to either the public or private partner.
- *Allocation Instrument:* Describes the instrument that could be used to reflect the Government's preferred risk allocation in the PPP agreement (for example, contract clause, payment mechanism, guarantee, etc.)

Table 6.3: Generic Preferred Risk Allocation Matrix

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Pre-contract risks					
Existing structure (refurbishment / extensions)	Risk that the procurement process will experience any of the following: (a) failure to attract sufficient qualified bidders and/or responsive offers; or (b) prolonged and expensive negotiations; or (c) collapse of negotiations.	Government	Government does not have a partner yet at this stage, so it has no option but to bear this risk.	▪ Careful preparation and management of the procurement process ▪ Ensure that the agency's procurement team is experienced and competent ▪ Establish a procurement schedule commensurate with project complexity	Since there is no agreement yet signed with any other party, there is no specific allocation instrument, but the lack of recourse to any sort of compensation.
Site risk					
Existing structure (refurbishment/ extensions)	Risk that existing structures are inadequate to support new improvements, resulting in additional construction time and cost	Private	Private sector can manage cost-effectively if proper due diligence of existing structure is conducted.	▪ Private firm will pass to builder which relies on expert testing and due diligence ▪ Give private firm enough time to do site studies	Contract clause requiring private partner to provide performance bond
Site conditions	Risk that unanticipated adverse geological conditions (geotechnical risk) are discovered which cause construction costs to increase and/or cause construction delays	Private – except when complex geological conditions are present AND project is government-solicited, private to absorb only up to a specific cost amount, after which government assumes	▪ Private sector can manage cost-effectively if site study effort is moderate and enough time is provided to bidders. ▪ Complex structures on linear infrastructure (road, rail, pipeline) may require more thorough and detailed geotechnical studies (for example, long tunnels and long span bridges in unstable terrain), that may not be reasonably completed within the bidding period or may be too expensive for bidders to conduct at the bidding stage without some cost sharing.	▪ Private firm will pass to builder which relies on expert testing and due diligence ▪ Give private firm enough time to do site studies ▪ Reimburse part of bidding cost to encourage bidders to prepare their own site studies	Contract clause requiring private partner to provide performance bond Contract clause stipulating the conditions and mechanism to compensate private sector for agreed-upon portion of cost over runs on technically complex structures (for example, tunnel cost overrun guarantee).

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Permits and approvals	Risk that necessary approvals (for example, environmental license, environmental management plan, construction permit) may not be obtained or may be obtained only subject to unanticipated conditions which have adverse cost consequences or cause prolonged delay	Private if and when: ▪ Permits and approvals have been obtained prior to the submission of proposals by potential bidders, and later modified at the request of successful bidder. Government if and when: ▪ Permits and approvals have not been obtained prior to bidder proposal submission – private is responsible to manage the process, though.	When Private: ▪ Private is better informed about the rationale for its request When Government: ▪ Government is better informed and positioned to influence the speed of the approval process, particularly in situations that are complex or sensitive.	Government to obtain in advance of the bidder proposal submission stage the requisite permits and approvals, which would allow the private firm to achieve a measure of pre-contractual certainty and an early start to the approval process.	Contract clause stipulating the schedule to obtain permits and approval and stipulating liquidated damages payable to private partner in case of delays
Environmental liabilities existing prior to project	Risk that project site is contaminated requiring significant remediation expenses	Private, except when: ▪ Project was solicited by the government; and ▪ Cost and time required to conduct a full due diligence (site study) for each bidder are such that the project would be significantly delayed or would deter potential serious bidders – in such case, some risk sharing along the lines of geotechnical site risk could be a solution	When Private: ▪ Private sector can manage cost-effectively if site study effort is moderate and enough time is provided to bidders. When Shared: ▪ Sites where site study effort may not be reasonably completed within the bidding period or may be too expensive for bidders to conduct at the bidding stage without some cost-sharing.	▪ Private firm will pass to builder which relies on expert testing and due diligence ▪ Give private firm enough time to do site studies ▪ Reimburse part of bidding cost to encourage bidders to prepare their own site studies	▪ Contract clause requiring private partner to provide performance bond ▪ Contract clause stipulating the conditions and mechanism to compensate private sector for agreed-upon portion of remediation expenses.
Environmental liabilities created during operation	Risk that the use of the project site over the contract term has resulted in significant environmental liabilities (clean up or rehabilitation required to make the	Private, if and when: ▪ Environmental license and environmental management plan has been approved prior to submission of proposals	▪ Private partner is able to manage the use of the asset and attend to its maintenance and refurbishment the environmental requirements known at the proposal stage	▪ During procurement private partner must demonstrate financial capacity or support to deliver the site in the state required by government at the end of the contract	▪ Contract clause defining what constitutes environmental liability and the mechanism to estimate the private partner's liability and pursue payment

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
	site fit for future anticipated use)	▪ Environmental license and management plan have not been approved prior to submission of proposals – liability is limited to amount estimated in proposal Government, if and when: ▪ Environmental license and management plan have not been approved prior to submission of proposals – liability for any excess over investor's proposed estimate.	▪ Government is better able to manage environmental requirements not known to bidders at the proposal stage	▪ Government to require sinking funds if it is to resume the site and its use is liable to result in significant clean up/ rehabilitation cost	▪ Contract clause requiring the establishment of clean-up/ rehabilitation sinking fund
Cultural heritage	Risk of costs and delays associated with archaeological and cultural heritage discoveries	▪ Government to assume risk on government preferred site ▪ Private partner to assume risk on private partner preferred site	Government generally has a better understanding of procedures, and is usually in best position to manage this risk	Research cadastral records and obtain expert advice	Contract clause defining risk and stipulating site availability schedule and liquidated damages payable in case of delays
Availability of site	▪ Risk that tenure/ access to a selected site which is not presently owned by government or private partner cannot be negotiated. ▪ Risk of costs and delays in negotiating land acquisition	▪ Government to assume risk on government preferred site – private partner may remain responsible for managing the process ▪ Private to assume risk on private partner preferred site	If government preferred site: ▪ Government has a better understanding of procedures, has special powers of acquisition and use of land for infrastructure and is usually in best position to manage ▪ Government is in better position to negotiate where policy discourages use of compulsory acquisition power If private preferred site: ▪ Private partner is in control of site selection	▪ Research cadastral records and obtain expert advice ▪ If government, preferred site: – Complete land acquisition prior to proposal stage If private preferred site: – Oblige bidders to secure access prior to contract signing	▪ Contract clause stipulating site availability schedule and liquidated damages payable in case of delays

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Design, construction and commissioning risk					
Design	Risk that the design of the facility is substandard, unsafe, or incapable of delivering the services at anticipated cost and specified level of service (often resulting in long term increase in recurrent costs and long term inadequacy of service)	Private – private partner will be responsible except where an express government mandated change has caused the design defect	Private partner has more experience, knowledge and control over the variables that determine the quality of the design (i.e. experience, competent staff, etc.)	▪ Ensure that the feasibility study is available in advance of the procurement process to adequately inform the design process ▪ Incorporate strict experience and competency requirements in the procurement process ▪ Private partner may transfer risk to builder/ architects and other subcontractors while maintaining primary liability; government has the right to abate service charge payments where the risk eventuates and results in a lack of service–it may ultimately result in termination where the problem cannot be suitably remedied	▪ Contract clause requiring performance bond ▪ Contract clause stipulating liquidated damages
Construction	Risk that events occur during construction which prevent the facility being delivered on time and on cost	▪ Private, except when: The event is one for which relief as to time or cost or both is specifically granted under the contract, such as force majeure or government intervention ▪ In situations where the technical or geological complexity (for example,	▪ Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process (i.e. schedule, equipment, materials and technology, etc.) – this assumes that private	▪ Incorporate strict experience and competency requirements in the procurement process ▪ Ensure that feasibility study is available well in advance of the procurement process ▪ Private firm generally will enter into a	▪ Contract clause requiring performance bond ▪ Contract clause stipulating liquidated damages contract clause ▪ Contract clause providing partial cost overrun guarantee for complex structures

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
		tunnels) prevents from having sufficient and reliable information to measure risk, the government may assume part of the risk	partner has enough information to estimate costs and start operations on schedule and as planned. ▪ A possible exception is in contractually agreed upon situations that classify as force majeure or government intervention.	fixed term, fixed price building contract to pass the risk to a builder with the experience and resources to construct so as to satisfy the private firm's obligations under the contract	
Commissioning	Risk that either the physical or the operational commissioning tests which are required to be completed for the provision of services to commence cannot be successfully completed	Private – although government will assume an obligation to cooperate and facilitate prompt public sector attendance on commissioning tests	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk	Incorporate strict experience and competency requirements in the procurement process	▪ Contract clause requiring a performance bond ▪ Contract clause stipulating liquidated damages (until all physical and operational commissioning tests passed)
Design, construction and commissioning risk					
Interest rates pre-completion	Risk that prior to completion local currency interest rates may move adversely	Government	Government has more experience and information regarding the factors influencing local currency interest rates and is in better position to manage risk	Construction loan interest rate hedging instrument (if and when available)	Contract clause defining mechanism to compensate private for interest rate changes during construction
Interest rates post-completion	Risk that after completion interest rates may move adversely	Private	Private partner in control of selecting and arranging long-term financing	▪ Interest rate hedging instruments (such as interest rate swap from IFC) ▪ Arrange financing using a mix of foreign and local currency	Contract clause holding government harmless

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Exchange rate	Risk that during operation, exchange rates may move adversely, affecting the private partner's ability to service foreign denominated debt and obtain its expected profit	Shared ▪ Government to assume part of it by allowing total or partial indexing of payments to exchange rate ▪ Private to assume remainder	▪ Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing ▪ Government has more experience and information regarding the factors that influence exchange rates	▪ Private to partially mitigate by partly financing the project in local currency ▪ Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's local currency revenues and foreign currency debt ▪ Government to partly transfer risk to users by allowing payment indexing to exchange rate	▪ Contract clause requiring establishment of a Foreign Exchange Liquidity Facility ▪ Tariff or payment adjustment contract clause
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	Government	Government has more experience and information regarding the factors that influence currency convertibility	Purchase partial risk guarantee from an International Financing Institution	Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits
Inflation	Risk that value of payments received during the term is eroded by inflation	Shared ▪ Government to assume part of it by allowing total or partial indexing of payments to inflation ▪ Private to assume remainder risk through the methodology adopted to maintain value	Government has more experience and information regarding the factors that influence inflation	▪ Government to transfer part of it to users by allowing total or partial indexing of payments to inflation rate ▪ Government to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project it is not available then and in the amounts and on the conditions anticipated	Private	Private partner is responsible for arranging finance	Government requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions
Sponsor risk	▪ Risk that the private partner is unable to provide the required services or becomes insolvent ▪ Risk that the private partner is later found to be an improper person for involvement in the provision of these services ▪ Risk that financial demands on the private partner exceed its financial capacity causing corporate failure	Government	If this risk materializes, there is no private partner to transfer the risk to	▪ Ensure project is financially remote from external financial liabilities ▪ Ensure adequacy of finances under loan facilities or sponsor commitments supported by performance bond ▪ Ensure adequacy of finances through the use of non financial evaluation criteria and due diligence on private partner	▪ Contract clause requiring a performance bond and letters of credit ▪ Contract clause requiring minimum liquidity and debt ratios
Further finance required due to government action	Risk that by reason of a change in law, policy or other event additional funding is needed to rebuild, alter, reequip etc the facility which cannot be obtained by the private firm (resulting in no funding available to complete further works required by government)	Government takes risk that private finance is unavailable – however, private partner to assume best endeavors obligation to fund at agreed rate of return with option on government to pay via an increase in fees over the balance of the term or via a separate capital contribution	Government has more information and is better positioned to manage risk	Government to satisfy itself as to likelihood of need arising, likely criticality if it does arise, and as to financial capacity of private to finance and (if appropriate) budget allocation if government is required to fund it	▪ Contract clause of best endeavors obligation by private to fund with option on government to compensate via fee increase or capital contribution. ▪ Contract clause providing a buy-out (put) option or termination with compensation for private should finance not be obtained and facility cannot be further operated

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	
Change in ownership	Risk that a change in ownership or control of the private firm results in a weakening in its financial standing or support or other detriment to the project	Shared ▪ Government risk as to the adverse consequence of a change if it occurs; ▪ Private firm risk that its commercial objectives may be inhibited by a restrictive requirement for government consent to a change	▪ If change occurs, the ability of private partner to manage risk is diminished ▪ Private partner would have to accept requirement to sign agreement, hence if condition is not acceptable, it could walk away from project	▪ Government requirement for its consent prior to any change in control. ▪ Private firm will seek to limit this control to circumstances where substantive issues are of concern such as financial capacity and probity	Contract clause requiring government consent prior to any change in control, and providing ability to influence or prevent change only in specific circumstances
Refinancing benefit	Risk (upside) that at completion or other stage in project development the project finances can be restructured to materially reduce the project's finance costs	▪ Private partner to benefit; ▪ Government to share in limited circumstances (i.e. symmetrical risk allocation and super profits)	Similar to interest rate risk – private partner has control over its choice of long term financing – if downside burden is placed on private partner, same principle applies to upside (symmetrical risk allocation)	Government to assure itself that likely benefit has been factored into competitive bids to avoid the risk that the private firm will be allowed to earn super profits from the project	Contract clause spelling out circumstances where government is to share and at what rate
Tax changes	Risk that before or after completion the tax impost on the private firm, its assets or on the project, will change	Private, if and when: ▪ Tax increases or new taxes arising from general changes in tax law Government, if and when: ▪ Tax increases or new taxes arising from discriminatory changes in tax law	▪ General changes in tax law affect all businesses in the country ▪ The government is in better position to influence specific discriminatory tax law changes affecting the project	Private partner to incorporate in project due diligence – financial returns of the private partner should be sufficient to withstand general tax law changes	▪ Contract clause providing compensation terms for discriminatory changes in tax law ▪ Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available
Operating risk					
Inputs	Risk that required inputs cost more than anticipated, are of inadequate quality or are unavailable in required quantities	Private, except when: ▪ Government controls inputs (for example, water catchment)	Private partner is in control of the selection of inputs.	▪ Private partner may manage through long term supply contracts where quality/quantity can be assured;	▪ Contract clause imposing penalties for breach of specific and well defined performance and quality specifications.

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
				▪ Private partner can address to some extent in its facility design	▪ Contract clause on compensation to private for issues attributable to government-supplied inputs
Maintenance and Refurbishment	Risk that design and/or and construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes	Private firm to manage through long term sub-contracts with suitably qualified and resourced sub-contractors	▪ Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications ▪ Contract clause requiring performance bond from private
Changes in output specification outside agreed specification range	Risk that government's output requirements are changed after contract signing whether pre or post commissioning ▪ Change prior to commissioning may require a design change with capital cost consequences depending on the significance of the change and its proximity to completion; ▪ Change after completion may have a capital cost consequence or a change in recurrent costs only (for example, where an increase in output requirements can be accommodated within existing facility capacity)	Government	Government is in better position to manage and mitigate the occurrence of the risk	Government to minimize the chance of its specifications changing and, to the extent they must change, it will ensure the design is likely to accommodate it at least expense; this will involve considerable time and effort in specifying the outputs up front and planning likely output requirements over the term	▪ Contract clause of best endeavors obligation by private to fund with option on government to compensate via fee increase or capital contribution ▪ Contract clause providing a buy-out (put) option or termination with compensation for private, should finance not be obtained and change makes project unviable

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Operator failure	Risk that a subcontract operator may fail financially or may fail to provide contracted services to specification (failure may lead to service unavailability and a need to make alternate delivery arrangements with corresponding cost consequences)	Private	Private partner is fully and primarily liable for all obligations to government irrespective of whether it has passed the risk to a subcontractor	Government to carry out due diligence on principal subcontractors for probity and financial capacity and commission a legal review of the major subcontracts including the guarantees or other assurances taken by the private partner; if failure does occur the private partner may replace the operator or government may require operator replacement	▪ Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications ▪ Contract clause requiring performance bond from private
Technical obsolescence or innovation	Risk of the contracted service and its method of delivery not keeping pace, from a technological perspective, with competition and/or public requirements ▪ Private partner's revenue may fall below projections either via loss of demand (user pays model) payment abatement (availability model) and/or operating costs increasing; ▪ Government may not receive contracted service at appropriate quantity/quality	Private – except where contingency is anticipated and government agrees to share risk possibly by funding a reserve	Private partner is able to use its expertise and know-how to minimize this risk	▪ Government to develop detailed, well-researched output specifications ▪ Private partner to develop detailed, well-researched design solution ▪ Private partner may have recourse to designer, builder or their insurers ▪ Private partner to arrange contingency/ reserve fund to meet upgrade costs subject to government agreement as to funding the reserve and control of reserve funds upon default; ▪ Both partners to monitor obligations in the contract	▪ Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications ▪ Contract clause defining the condition required of the facility at the end of the term ▪ Contract clause requiring performance bond from private ▪ Contract clause specifying mechanism to establish a reserve fund (private, public- private, public)

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Demand risk					
Demand risk	Risk that operating revenues falls below forecast as a result of decrease service volume (i.e. traffic volume, water or power consumption) attributable to an economic downturn, tariff increases or change in consumer habits	Private, except when: ▪ Uncertainty in demand forecast is such that providing an availability payment element and/or a minimum revenue guarantee is necessary to attract private investment (for example, greenfield toll road), in which case, the government will share in the risk through an availability payment or a minimum revenue guarantee.	▪ When demand can be estimated with relative certainty, the private partner is in a better position to mitigate risk through commercial management practices ▪ Where government is the primary off-take it has better information to manage risk	▪ Government and private to perform independent market demand analyses commensurate with project scale and characteristics ▪ Where users pay private partner will ensure robust financial structure and financier support – Adequate debt coverage – Adequate reserves – Credit enhancement, insurance	Contract clause stipulating the availability payment or mechanism to establish minimum revenue payments
Non-technical losses (tariff avoidance)	Risk of a portion of users or customers not paying or evading payment for service, leading to a shortfall in cash flows	Private, except when: ▪ There is limited scope for private to stop service or pursue payment (for example, service delivery or payment collection is controlled by government)	Private sector has better access to information needed to identify non- paying users and stop/continue service to them.	Private firm to incorporate measures (technological, business processes, and otherwise) to identify non-paying customers and prevent and deter non-payment.	Contract clause giving the ability to private partner to stop service to non-paying customers and stipulating the mechanisms available to collect payment.
Network and interface risk					
Withdrawal of support network	Risk that, where the facility relies on a complementary government network, support is withdrawn or varied adversely affecting the project	Government, where the change discriminates against the project	Government is in control of complementary network management	Government to conduct thorough network planning process when developing project concept	Contract clause defining what constitutes unfair discrimination against the project and specifying mechanisms to compensate private (for example, liquidated damages)

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Changes in competitive network	Risk that an existing network is extended/ changed/re-priced so as to increase competition for the facility	Private, except when: ▪ Changes are discriminatory against the project ▪ Competition is government-subsidized (for example, a competing toll-free road on the same corridor)	Government manages network allowing it to influence the materialization of network risk and its consequences	▪ Government to conduct thorough network planning when developing project concept ▪ Private firm to review likely competition for service and barriers to entry prior to enter agreement ▪ Private firm will seek compensation against change which unfairly discriminates against the project by government subsidizing competition (existing or new)	Contract clause to provide private partner with non-compete protections and compensation mechanisms
Interface (1)	Risk that the delivery of core services in a way which is not specified/anticipated in the contract adversely affects the delivery of contracted services	Private, except when: ▪ Changes involve discriminatory to the project – government to provide compensation	Government manages core service activities allowing it to influence the materialization of interface risk and its consequences	▪ Government to conduct thorough system planning when developing project concept ▪ Upfront assessment (by both government and the private partner) of likely interface issues ▪ Continuous review and monitoring and development of a communications strategy in respect of delivery of the two related services	▪ Contract clause to specify the extent of core services and the way in which they will be delivered so that only manifest and adverse changes and deficiencies can trigger this risk ▪ Contract clause defining compensation mechanism for private partner
Interface (2)	Risk that the delivery of contracted services adversely affects the delivery of core services in a manner not specified/anticipated in the contract	Private	Private firm manages contracted service activities	▪ Upfront assessment (by both government and the private partner) of likely interface issues ▪ Continuous review and monitoring and development of a communications strategy in respect of delivery of the two related services	Contract clause requiring a performance bond and specifying liquidated damages

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Industrial relations risk					
Industrial relations	Risk of strikes or industrial action causing delay and cost to the project	Private	Private partner has better information about and control over the causes of industrial action	Private partner (or its subcontractors) manage project delivery and operations	Contract clause requirement payment of liquidated damages to government
Legislative an d government policy risk					
Approvals	Risk that additional approvals required during the course of the project cannot be obtained	Private, except when: ▪ Government has initiated the change requiring approval	Government is in better position to manage and mitigate the occurrence of the risk	Private to anticipate requirements	Contract clause to specify private partner compensation mechanism (for exam-ple, liquidated damages)
Changes in law/ policy	Risk of a change in law/policy of government only, which could not be anticipated at contract signing and which has adverse capital expenditure or operating cost consequences for the private firm	▪ Private, if and when: Changes occur in general law and are not project or service specific ▪ Government, if and when: Changes are discriminatory and directed specifically and exclusively at the project or the services	▪ General changes in law affect all businesses in the country ▪ Government is in better position to influence specific discriminatory tax law changes affecting the project	▪ Private partner to incorporate in project due diligence–financial returns of the private partner should be sufficient to withstand general law/policy changes ▪ Government to monitor and limit (where possible) changes which may have these effects or consequence on the project ▪ Government to require the private firm to effect the change in a way that the financial effect on government is minimized (for example, pay on a progressive scale); ▪ Government to pass through to end users	▪ Contract clause allowing compensation to private in a pre-specified ▪ Contract clause to allow pass through to end users

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
Regulation	Risk that where there is a statutory regulator involved there are pricing or other changes imposed on the private firm which do not reflect its investment expectations	Private, except when: ▪ Tariffs or payments are pre-specified in the contract	The private partner has the ability to undertake its own assessment of the regulatory system	Private firm to assess regulatory system and may make appropriate representations	Contract clause to specify whether payment will be subject to regulator or not, and if not, specify mechanism to set and adjust tariffs.
***Force majeure* risk**					
Force majeure risk	Risk that inability to meet contracted service delivery (pre or post completion) is caused by reason of force majeure events	▪ Private takes risk of loss or damage to the asset and loss of revenue when risk is insurable (for example, earthquake, floods, fire, and drought) ▪ Government takes some risk of service discontinuity both as to contracted service and core service when risks are uninsurable (i.e. terrorism acts, war, civil unrest, etc.)	▪ Private partner can buy insurance from the marketplace— commercial ▪ Government is better positioned to manage uninsurable risks	▪ Private to purchase insurance for insurable risks ▪ If uninsurable, private firm may self-insure by establishing reserve funding; ▪ If uninsurable government to establish contingency for alternate service delivery	▪ Contract clause to expressly define events that will constitute acts of God and political force majeure events ▪ Contract clause to relieve private from consequences of service discontinuity; ▪ Contract clause to require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and government is to be given the benefit of insurance for service disruption costs
Asset ownership risk					
Default and termination	Risk of 'loss' of the facility or other assets upon the premature termination of lease or other project contracts upon breach by the private firm and without adequate payment	Private firm will take the risk of loss of value on termination	Private firm has more knowledge of the underlying causes of default and can identify risk earlier than government	▪ Only serious breaches by the private firm to lead to termination ▪ Private partner to be given time and opportunity to remedy defaults by the private partner which may lead to termination	▪ Contract clause clearly establishing specific contract breaches leading to termination ▪ Contract clause to define options for remediation of default ▪ If and when necessary, contract clause to

Risk	Definition	Preferred Allocation	Rationale	Possible Mitigation Strategies	Allocation Instrument
				▪ If termination occurs pre- completion government may (but need not to) make payment for value in the project on a cost to complete basis; ▪ If termination occurs post completion the private partner may receive fair market value less all amounts due to government ▪ Government to require step in rights to ensure access and service continuity until ownership/control issues are resolved	define method to establish compensation to private in case of termination (pre and post-completion)
Residual value on transfer to government	Risk that on expiry or earlier termination of the services contract the asset does not have the value originally estimated by government at which the private partner agreed to transfer it to government	Private	Private partner can incorporate lifecycle maintenance, refurbishment, and performance requirements into the design facility, and can manage these process during the term of the contract	▪ Government to impose on the private maintenance and refurbishment obligations, ▪ Government to ensure an acceptable maintenance contractor is responsible for the work, commission regular surveys and inspections; ▪ Government may require private to establish a dedicated sinking fund to accumulate funds sufficient to bring the asset to agreed condition and/or (if required) obtain performance bonds to ensure the liability is satisfied	▪ Contract clause specifying the conditions in which assets are to be transferred to the government at the end of the term ▪ Contract clauses stipulating the performance indicators and frequency of monitoring of these indicators ▪ Contract clause requiring the creation of a sinking fund to cover the cost of bringing the facility up to the desired standard

6.3 Steps to Follow

Implementing agencies should follow the steps shown in Figure 6-3 to identify, assess, and allocate project risks.

Figure 6.3: Steps for Allocating Risks

Each of these steps is described in turn below. The end result of this process should be a draft risk management report, following the structure outlined in Table 6.4. This is similar in structure to the preferred risk allocation matrix presented in Table 6.3, but includes project-specific information—in particular, the severity and likelihood and therefore the priority attached to each risk.

Table 6.4: Risk Management Report Outline

Risk (1)	Definition (2)	Proposed Allocation (3)	Rationale for Allocation (4)	Severity of impact, likelihood of occurrence and priority (5)	Mitigation Strategy (6)	Allocation Instrument (7)
Risk Category						
States the risk—in order of stated detail priority within each category	*Defines the risk in more detail*	*States the proposed allocation of the risk as one of three choices: (i) private partner; (ii) government; and (iii) shared*	*Describes the basis or justification for the proposed allocation*	*States the severity of impact (as insignificant to extreme), likelihood of occurrence (as rare to almost certain) and priority (from low to high)*	*Describes measures that and could be taken to mitigate or reduce the risk to either the public or private partner.*	*Describes the instrument that could be used to reflect the Government's preferred risk allocation in the PPP agreement*

This draft risk management report should then be compared with the allocation of functions and payment method described in Sections 4 and 5, and adjusted if necessary. The final version of this risk management report should form part of the project proposal documents.

Step 1: Identify Risks

The implementing agency would start by identifying the risks that should be included in the risk management report. The generic risk allocation matrix presented in subsection 6.2 (Table 6.3) can be used as a template to develop a preliminary list of risks for the project in question. Agencies would then convene a structured brainstorming session among experts in fields relevant to

the project, to produce a comprehensive list of major project risks that includes a short and concise definition of each risk. This process is described in Box 6.4 below. The comprehensive risk list then forms the basis of the risk assessment step.

Box 6.4: Structured Brainstorming Process

Structured brainstorming is a frequently used technique in risk identification. It can be defined as a systematic process of liberally generating a large volume of ideas from a diverse group of experts by stimulating their individual creativity. The principle of structured brainstorming is that a group of experts of different competences and backgrounds will view the project from different perspectives and therefore identify more, and possibly other, risks than individuals or a more heterogeneous group.

Unlike unstructured brainstorming, where participants contribute ideas as they occur to them, structured brainstorming provides specific rules for participants to follow in order to make the generation of ideas more systematic and to ensure even participation, regardless of personality and/or ranking.

How to do it

The goal of structured brainstorming is to generate ideas. Before the exercise commences, it is very important that participants understand the importance of postponing judgments until after the brainstorming session is completed.

Write the problem or topic on a blackboard or flipchart where all participants can see it

- Write all ideas on the board and do as little editing as possible
- Number each idea for future reference
- Solicit one idea from each person in sequence
- Participants who don't have an idea at the moment may say "pass."
- A complete round of passes ends the brainstorming session

The result of a brainstorming session is a list of ideas. Implementing agencies can find additional guidance on how to conduct a structured brainstorming session on these links:

http://www.mitre.org/work/sepo/toolkits/risk/procedures/brainstorming.html
http://www.siliconfareast.com/brainstorming.htm

The following internet sites provide references that can also be used to help identify risks in infrastructure PPPs:

- Concessions in general:
  http://rru.worldbank.org/Documents/Toolkits/concessions_fulltoolkit.pdf
- Highways:
  http://rru.worldbank.org/Documents/Toolkits/Highways/
- Ports:
  http://www.ppiaf.org/documents/toolkits/Portoolkit/Toolkit/index.html
- Urban Buses:
  http://www.ppiaf.org/documents/toolkits/UrbanBusToolkit/assets/home.html
- Water:
  http://siteresources.worldbank.org/INTSDNETWORK/Resources/Appr oachestoPrivateParticipationWaterServices.pdf
- Waste Management:
  http://rru.worldbank.org/Documents/Toolkits/waste_fulltoolkit.pdf

Step 2: Assess Risks

The implementing agency would then assess each identified risk, to understand:

- The likelihood of occurrence and severity of the associated loss
- The ability of each party to control, anticipate and respond to or absorb the risk – along with the possible risk mitigation strategies by which they would do so.

At this stage, the likelihood of occurrence and severity of the associated loss of each risk would be assessed in a qualitative way. The purpose of this assessment is to prioritize effort in allocating risks and defining risk mitigation strategies. The severity of the loss may also impact the parties' ability to absorb the risk.

A quantitative analysis of risk would require estimating the probability of loss, the value of loss and hence the expected value of loss (probability times value). A qualitative analysis mirrors this approach, by characterizing the likelihood of a risk event occurring and the severity of the loss if the risk occurs. For example, likelihood can be characterized in a simple way, such as: (i) almost certain; (ii) likely; (iii) possible; (iv) unlikely; and (v) rare. Consequence can be characterized as: (i) insignificant; (ii) minor; (iii) moderate; (iv) major; or (v) extreme. These characterizations can then be combined, to define the overall level of priority of the risk, as illustrated in Figure 6.4.

Figure 6.4: Risk Prioritization Matrix

		SEVERITY OF IMPACT				
		Insignificant	Minor	Moderate	Major	Extreme
LIKELIHOOD OF OCCURRENCE	Almost certain	MEDIUM-HIGH PRIORITY	MEDIUM-HIGH PRIORITY	HIGH PRIORITY	VERY HIGH PRIORITY	VERY HIGH PRIORITY
	Likely	MEDIUM-LOW PRIORITY	MEDIUM-HIGH PRIORITY	MEDIUM-HIGH PRIORITY	HIGH PRIORITY	VERY HIGH PRIORITY
	Possible	MEDIUM-LOW PRIORITY	MEDIUM-LOW PRIORITY	MEDIUM-HIGH PRIORITY	MEDIUM-HIGH PRIORITY	HIGH PRIORITY
	Unlikely	LOW PRIORITY	MEDIUM-LOW PRIORITY	MEDIUM-LOW PRIORITY	MEDIUM-HIGH PRIORITY	MEDIUM-HIGH PRIORITY
	Rare	LOW PRIORITY	LOW PRIORITY	MEDIUM-LOW PRIORITY	MEDIUM-LOW PRIORITY	MEDIUM-HIGH PRIORITY

The implementing agency should also assess the ability of each party to control, anticipate and respond to or absorb each risk, as well as the possible risk mitigation strategies, by which this ability could be improved. Risk mitigation strategies that are clearly not cost-benefit justified should be excluded, following Principle 4 described in Section 6.2.

Risk assessment is typically carried out through a similar process to that described above for identifying the risk. The list of risks identified under step 1 can be used as a starting point, while the preferred risk allocation matrix (Table 6-3) can also provide useful inputs. Brainstorming and consultations can be structured around completing a project risk assessment table. This table can then be used as the basis of the risk allocation step, and to complete the risk allocation report (which will contain much of the same information). Table 6.5 provides an example outline of a risk assessment table.

Table 6.5: Risk Assessment Table Outline

Risk	Definition	Severity of Impact	Probability of Occurrence	Priority	Party best placed to:			Possible Mitigation Strategies
					Control	Anticipate and respond	Absorb	
Risk Category								
Risk Type								

While the assessment of the likelihood and severity of risks at this stage is qualitative, ultimately it is important for the government to quantify as far as possible the risk to which it will be exposed through a PPP project. Quantitative analysis of high- priority risks to be borne by the government will be an additional step, once the proposed risk allocation is complete.

The following links provide additional information on approaches to assessing PPP project risk:

- The Victorian Managed Insurance Authority Guide for Developing and Implementing your Risk Management Framework: http://www.vmia.vic.gov.au/skillsEDIT/clientuploads/48/VMIA_Risk%20Management%20Guide_3%20Implementing%20a%20risk%20management%20framework.pdf
- The report Feasibility Evaluation Model for Toll Highways, found on the following link: http://swutc.tamu.edu/publications/technicalreports/467502-2.pdf

Step 3: Allocate Risks

The implementing agency's next step would be to allocate each risk. Risks within each overall category should be considered in order of their level of priority, as designated during risk assessment (and documented in the risk assessment table). This helps focus attention on appropriate allocation of the highest-priority risks.

Risks should be allocated according to the principles described in Section 6.2. Following the order of those principles, the implementing agency would generally first allocate any risk that can reasonably be controlled by either party (or both) to the party best able to control it. If a risk cannot be controlled directly, it should generally be allocated the party best able to anticipate and respond to it. Risks that cannot be controlled or responded to should be allocated to the party best able to bear the risk. As also described in Section 6.2, these principles may weigh against each other—deciding on the overriding factor may require

judgment based on experience on the part of the implementing agency and its advisors. The availability of possible risk mitigation strategies could affect the relative ability and cost of parties to manage each risk.

The generic preferred risk allocation matrix and the project risk assessment table together provide the basis for carrying out this allocation. In general, following the generic preferred risk allocation should be consistent with the risk allocation principles. However, project-specific characteristics – captured in the project risk assessment table – may suggest deviating from the generic preferred risk allocation.

The implementing agency should also identify the risk allocation instrument that could be used to reflect the chosen risk allocation in the PPP agreement (for example, contract clause, payment mechanism, guarantee, etc.). Again, this can be informed by the preferred risk allocation matrix, backed up by the experience of the structuring team and advisors.

As risks are allocated, the implementing agency can gradually complete a first version of the draft risk management report (as outlined in Table 6.4), drawing on the information in the project risk assessment, and capturing each risk allocation decision. Particular care should be taken in describing the rationale for allocating any risks that have not followed the generic preferred risk allocation.

Step 4: Develop Risk Mitigation Strategies

Once risks have been allocated, the risk allocation process and draft risk management report are almost complete. The final step is to develop the relevant risk mitigation strategies, given the proposed risk allocation.

In general, this means refining the possible risk mitigation strategies identified under the risk assessment step. Some of these will no longer be relevant, if the party for whom the possible strategy could have been an option has not been allocated the associated risk. At this stage, particular emphasis should be placed on how the implementing agency will mitigate risks it has been allocated. Each possible risk mitigation strategy should be assessed as far as possible for its expected costs and benefits. The implementing agency should also note wherever their support would be needed to mitigate a risk that has been allocated to the private party. For example, this could include ensuring the procurement process puts enough emphasis on the private party's technical understanding of the proposed project.

As the possible risk mitigation strategies are refined and developed, the implementing agency can complete the final columns (6 and 7) of the draft risk management report.

6.4 Example

This section presents examples of the four steps in the risk allocation process applied to the mass rapid transit case study presented in Appendix A.2. In our mass rapid transit case study, the MTA is interested in implementing the Silver Line project using a BOT-PPP for the provision of new rail infrastructure. Each of the risk allocation steps is described below

Step 1: Identify Major Risks – after conducting a structured brainstorming exercise like the one described in Box 6.4 the structuring team identified all major risks for the mass transit project, including those listed in the first column of Table 6.6: permits and approvals, construction, inflation, and demand risks.

Step 2: Assess Risks – the severity of impact and the probability of occurrence of each risk was assessed, in order to attach a priority. The team also identified the party that would be best able to control, respond to or absorb each risk, as well as possible risk mitigation strategies. This risk assessment was documented in the section of the risk assessment table shown in Table 6.6.

Step 3: Allocate Risks —Based on their risk assessment, the team allocated the risks as follows:

- Risks associated with policies and permits approvals were allocated to MTA, based on its better capacity to control those risks
- Construction risks were allocated to the private party, based on the private party's greater experience and knowledge of construction techniques and control over construction planning (the importance of ensuring that the private party does indeed have the appropriate level of experience was acknowledged)
- Inflation risk generated some confusion —the team thoroughly analyzed historical inflation-related project problems on prior similar projects, but concluded that neither the agency nor the private partner had much ability to control or respond to it. However, MTA was considered best placed to anticipate inflation, and had the best mitigation strategies available, given its ability to pass inflation-related cost increases on to users—this was also consistent with the generic preferred risk allocation matrix (Table 6.3)
- Demand risk was allocated to MTA, based on its control of price and of possible competing systems.

Table 6.6: Example Section of Risk Assessment Table— Mass Transit Silver Line Project

Definition	Severity of Impact	Probability of Occurrence	Priority	Party best placed to:			Possible Mitigation Strategies
				Control	Anticipate and respond	Absorb	
Site risk							
Risk that building permit from local authorities is delayed	Minor	Unlikely	Medium-Low	MTA	MTA		Obtaining prior approval from relevant local authorities [any party]
Design and construction risk							
Risk that events occur during construction which prevent infrastructure availability from being delivered on time and on cost	Major	Possible	Medium-High	Private	Private		Undertaking detailed studies prior to construction to obtain better information on construction costs [any party] Ensuring competence of private party in controlling risk of construction cost overruns through rigorous procurement process [MTA]
Sponsor and financial risk							
Risk that inflation increases at a higher than expected rate	Major	Likely	High	None	MTA	MTA	Passing cost increases on to users [MTA, since controls prices and receives revenues] Hedging against inflation rates [any party]
Market risk							
Risk that ridership demand on the line is lower than expected	Moderate	Possible	Medium-High	MTA	MTA		Carrying out detailed demand studies to improve estimates of expected demand and make sure required system capacity is commensurate [any party]

Once these risks had been allocated, the team used example contracts and drew on their own experience to propose the risk allocation instrument that should be used to accomplish the allocation. The risk allocation and the supporting analysis were documented in the draft risk management report, as shown in Table 6.7.

Step 4: Develop Risk Mitigation Strategies —Having allocated the risks, the team refined the possible strategies for mitigating the risks identified during risk assessment. Since risks associated with permits and approvals were allocated to the MTA, the MTA would be responsible for mitigating the risk of delays by obtaining prior approvals from local authorities. To mitigate construction-related risks, the MTA would incorporate strict experience and competency requirements for investors in the procurement process. The possible mitigation strategy of hedging against inflation increases was rejected as unlikely to be cost-benefit justified. These mitigation strategies were noted in column 6 of the risk management report, which was now complete.

Appendix Table A.2 presents a comprehensive risk management report for the Silver Line Mass Rapid Transit project. Other tables in Appendix A present a set of comprehensive risk management reports for additional infrastructure project cases in different sectors. These four additional examples were completed using the guidelines presented in this section and are the following:

- Transport – airport (Appendix Table A.1)
- Bulk water supply (Appendix Table A.3)
- IT and communications (Appendix Table A.4)
- Solid waste collection and disposal (Appendix Table A.5)

Table 6.7: Example Section of Risk Management Report — Mass Transit Silver Line Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Site risk						
Permits and approvals	Risk that building permit from local authorities is delayed	MTA	MTA is best placed to influence the decision of other government officials that issue these permits and approvals	Minor Unlikely Medium-Low Priority	MTA should obtain, prior to bidding, building approval in principle from local authorities	Contract clause stipulating deadline by which building approval is granted and defining remedies in favor of private firm in case of delay
Design and construction risk						
Construction	Risk that events occur during con-struction which prevent infrastructure availability from being delivered on time and on cost	Private, except when: ▪ The event is one of force majeure or government intervention	Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process (i.e. schedule, equipment, materials and technology, etc.)	Major Possible Medium-High Priority	MTA to incorporate strict experience and competency requirements in the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages Availability payment upon delivery of availability provides an incentive for early completion
Sponsor and financial risk						
Inflation	Risk that inflation increases at a higher than expected rate	Shared ▪ MTA to assume part of it by allowing total or partial indexing of availability payment to inflation ▪ Private to assume remainder risk (if any)	MTA has more experience and government information regarding the factors that influence inflation	Major Likely High Priority	MTA to transfer part of it to users by adjusting retail rates by inflation MTA to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms
Market demand risk						
Demand risk	Risk that ridership demand on the line is lower than	MTA	Private firm has no influence or control of ridership demand	Moderrate Possible Medium-High	MTA to carryout demand studies to determine if forecasted demand is consistent with the	Contract clause stipulating fixed payments for making infrastructure available

7 Market Test

The transaction structure will have better chances of succeeding if it is a commercially attractive investment opportunity. Many attempts to implement PPP transactions have failed because, whilst being responsive to the interests and objectives of the government, the transaction structure is not commercially attractive.

To cover this issue, implementing agencies should engage with private firms that may be interested in the transaction. The process that is involved in this dialogue is presented in Figure 7.1.

Figure 7.1: Steps to Market Test Transaction

The first step is to write a short (1 or 2 page) teaser that describes the basic features of the project and of the transaction structure that results from the five steps in the structuring process.

The implementing agency would place an advertisement in papers with circulation in locations where target private firms are located, and in journals that circulate among practitioners in the industry. The advertisement will ask interested firms to register their interest with the implementing agency. This registration is independent of the bidding process that will be followed to award the PPP contract. This bidding process will need to follow all applicable laws and regulations.

The implementing agency and its advisors will engage with prospective bidders to explain in more detail the key features of the transaction and to request their feedback on the proposed structure and indication of their preliminary interest in the transaction.

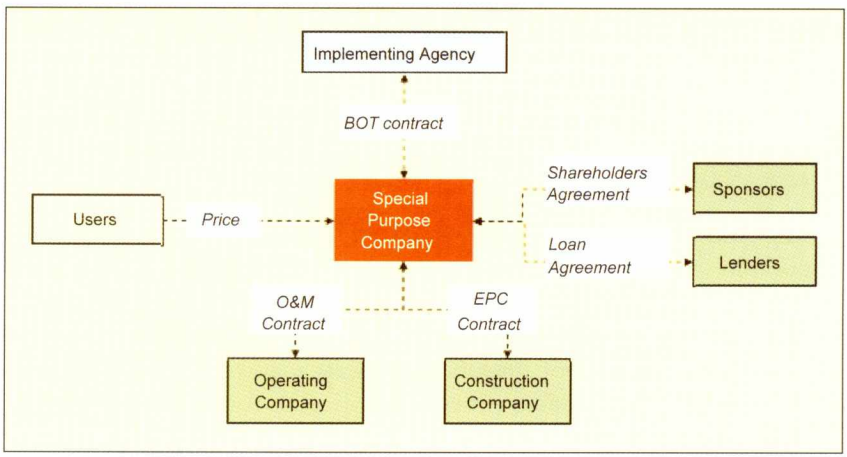
Implementing agencies should require prospective bidders to involve prospective lenders during these initial discussions. At this early stage in the process it is unlikely that the prospective bidder will have a clear idea of which bank will be providing debt to the project, but in most cases bidders will have relationships with banks that they will consider as candidates for providing debt. It is therefore reasonable to demand that bidders involve representatives from one or more of these banks in the consultation about the project structure. Having lenders involved from this early stage will reduce the risk that substantial changes are

needed to the contract during the period leading to financial closure. Banks will usually provide debt in the form of a 'project finance' loan.

A more detailed discussion on project finance deals is presented in the box below.

Box 7.1: Project Finance Structures

Project finance is the financing of long-term infrastructure projects based on a financial structure where debt and equity used to finance the project are repaid with the cashflows of the project. Usually, a project financing structure involves a number of equity investors, known as sponsors, as well as a syndicate of banks that provide loans to the project. The diagram below illustrates a simplified version of the typical structure of a project finance deal.



The sponsors will usually create a special purpose company for the development, construction and operation of the project. The shareholders of this company are the sponsor or sponsors of the project, and their percentage ownership in the company is proportional to the equity that they invested in the company. The special purpose company shields other assets owned by the sponsor from the detrimental effects of a project failure. The special purpose company has no assets other than the project. The company will have a Managing Director or Chief Executive and a limited number of staff.

The special purpose company will be the legal counterpart to the BOT contract signed with the implementation agency. This means that the

company is responsible for meeting all the obligations stipulated in the contract. The company will normally enter into contracts with specialized firms for construction, and operation and maintenance of the project. The common practice is to have an Engineering, Procurement and Construction (EPC) contract with a construction contractor. This EPC contract will normally pass all construction risks to the contractor—including risks of cost over-runs or delays.

Operations and maintenance of the project are also usually outsourced to a specialized firm through an Operations and Maintenance (O&M) contract. This type of contract will generally transfer to the specialized firm all risks related to operations and maintenance of the project.

If the project is expected to charge end-users for the services it provides (for example, in the case of a toll road), the special purpose company will collect payments from end-users and will use that revenue to cover its costs.

The company will raise the capital needed to develop and build the project as a mixture of debt and equity. During the development phase it is common that all capital contributions are made by sponsors in the form of equity injections. When the project is fully developed—meaning that the BOT, EPC and O&M contracts are executed and all permits secured—the company will secure the capital needed to pay for the construction of the project. Generally around 60 to 80 percent of this capital is financed with 'project finance loans' and the remaining amount with equity.

The loans are most commonly non-recourse loans, which are secured by the project assets and paid entirely from project cash flow, rather than from the general assets or creditworthiness of the project sponsors. The financing is typically secured by all of the project assets, including the revenue-producing contracts. Project lenders are given a lien on all of these assets, and are able to assume control of a project if the project company has difficulties complying with the loan terms.

This means that lenders need to carefully analyze and understand the underlying project risks when deciding if they are going to lend and at what terms. Their analysis will usually follow a similar process to that outlined in section 6 of these Guidelines. They will start by identifying the risks borne by the project company—using a matrix similar to that presented in Section 6.2.2 (Table 6.3). They will then identify which of the risks borne by the project company have the highest expected loss—that is, highest probability of occurring and highest value if it occurs. Risks like delay in the construction of the project, construction cost over- runs, downturn in

demand, adverse price adjustments, and severe fluctuations in exchange rate would generally be of particular importance. The lenders will review how the project company is planning to manage these risks. For example, they would want to know if construction risks are being adequately transferred to the EPC contractor and if the contractor has the financial capacity to bear this risk, and in particular to pay liquidated damages if they experience delays.

By having the implementing agency follow a similar risk analysis process to that used by lenders, and using similar resources—such as the sector-specific risk allocation matrices—it is likely that PPP projects will be structured in a way that makes them responsive to the objectives of the government, and at the same time attractive to sponsors and lenders. It is possible however that sponsors and lenders, based on their analyses, conclude that risks allocated to them are unacceptable. Whilst sponsors and lenders could charge a premium on the capital that they provide to cover their risk exposure, they might find it unattractive, in relation to other options for investing their capital, to that level of risk in one project. This type of views about the level of risk of the project will emerge during the consultations with prospective bidder and lenders. In some cases it might be necessary for the implementing agency to reconsider the allocation of risk resulting from the application of Step 5 in the structuring process to accommodate feedback received during these consultations.

Based on this feedback the implementing agency and its advisors will decide whether and what components of the transaction structure to adjust. At this point the implementing agency is ready to proceed to preparing the bidding process, including drafting bidding documents and contracts.

8 Application of Guidelines to Unsolicited Projects

Implementing and oversight agencies can also use these Guidelines to assess if an unsolicited project has been well structure or not, or to identify the key areas of the proposed structure that need to improve. The sections that follow describe how each step of the structuring process can be applied to an unsolicited project.

8.1 Step 1: Prepare and Plan Transaction

The objective of this step is to make sure that there is clarity on who will do what during the transaction preparation and what are the actions that will take the transaction from concept to closure. A key part of this step is to develop and launch a consultation action plan. In the case of an unsolicited proposal, the implementing agency would benefit from applying most of the sub-steps described in the Guidelines. More specifically, the implementing agency should:

- Assign an internal team to review the unsolicited proposal, negotiate with the unsolicited proponent, request all the necessary approvals and prepare and launch the Swiss Challenge
- Retain specialized advisors that will support its work. This type of specialized advice is crucial during the negotiations with the unsolicited proponent
- Have a clear plan for consulting with stakeholders. Parts of this consultation should be done by the unsolicited proponent, particularly the parts that relate to consulting with prospective users
- Prepare a plan for taking the unsolicited proposal from the stage of being reviewed and approved by the implementing agency, to the stage in which the Swiss challenge has been completed and a contract becomes effective

8.2 Step 2: Set Objectives and Constraints

This second step aims to set the objectives that the implementing agency is seeking to achieve with a PPP arrangement and the constraints that exist for this arrangement. These objectives and constraints will guide the decisions on how to allocate functionsand risks among the implementing agency and the private sponsor.

In the case of an unsolicited proposal, the implementing agency should carry out this step in full as described in section 3 of these Guidelines.

8.3 Steps 3, 4 and 5: Allocate Functions, Set Payment Method and Allocate Risks

The objective of these steps is to determine the key terms of the PPP structure—that is, what functions will be transferred to the private partner, how would the private partner be paid for performing these functions and how would the risks associated with the project will be allocated between the private party and the government. One of the key outcomes of these steps is a risk matrix similar to that presented in Table 6.4.

The proposal submitted by the unsolicited proponent will have a set of key terms implied in it. The implementing agency will want to verify if the terms of the unsolicited proposal are consistent with those derived from applying Steps 3 to 5, or to understand what are the main differences, and if these differences are justified or not. To this end, we suggest that implementing agencies carries out in full steps 3 to 5 as described in these Guidelines and that they use the result of this work to analyze the terms implied by the unsolicited proposal.

8.4 Step 6: Market Test

The objective of this step it to test with prospective bidders if the terms of the unsolicited proposal are reasonable or if they need to be adjusted. The implementing agency will greatly benefit from strong competition for this contract. The chances of competition will increase if prospective challengers are consulted before the implementing agency and the unsolicited proponent reach final agreement on the terms of the contract.

To this end, implementing agencies should carry out in full step 6 in the structuring process. This step could be carried out in parallel to Steps 3 to 5, but will need to be completed after step 5 is completed.

Appendix A Case Studies

This appendix presents a short narrative with the basic information on the five case studies that are used as examples at various parts of the guidelines. Each of the examples also presents a risk allocation matrix completed following the principles outlined in Section 6. The five case studies are the following:

- Transport – airport
- Transport – mass transit
- Bulk water supply
- IT and communications
- Solid waste collection and disposal

A.1 Transport – Airport

Project Description

The Civil Aviation Administration (CAA) of MyCountry is interested in structuring a PPP arrangement for the MyBeach International Airport (BIA). More specifically, the project will involve financing, upgrading, operating and maintaining BIA's facilities to accommodate air traffic growth forecasts and meet International Civil Aviation Organization (ICAO) standards.

The airport currently handles 353,000 passengers and 6,000 aircraft movements per year. These figures could grow significantly over the next 10 years to about 700,000 passengers and over 8,500 aircraft movements per year. The estimated investment required to meet this increase in demand and meet ICAO standards includes:

- Airport runway rehabilitation and expansion - $13.0 million
- Passenger terminal rehabilitation and expansion - $7.0 million
- New refrigerated cargo facilities construction - $7.0 million

The Project will be developed and procured following the solicited proposal process prescribed under BOT Law and its Implementing Rules and Regulations (IRR).

Project Rationale

MyCountry, an island nation in the South China Sea, is emerging from a major financial crisis and now it seems to be on its way to economic recovery (4.40 percent GDP growth in 2003). As a result of economic growth and the growing popularity of the country as tourism destination, air traffic is expected to continue to grow significantly, particularly at BIA in the remote beach resort island of MyBeach. However, the government has not been able to keep up

with the cost of funding the air infrastructure system, which is ageing and soon will be in need of massive investment. Despite major financial difficulties, the country has reached a comfortable level of political stability and is getting the attention of foreign investors. The MyCapital international airport in MyCountry's main island generates enough revenues for the government to subsidize the ongoing operation of BIA and of other minor domestic airports in the archipelago. However, this revenue is not sufficient to cover badly needed capital investment throughout the airport system, and particularly at BIA, which has seen international air traffic increase significantly in the last few years. Despite the recent and expected future growth in air traffic, BIA revenues are simply not expected to cover its operational costs.

Given the precarious situation of the overall airport system, BIA is not in a position to capitalize on growth in tourism and opportunities to boost exports of local produce via air cargo in coming years. For this reason the government is evaluating various alternatives to correct the present situation and to be prepared to face major challenges ahead.

Civil Aviation Administration (CAA)

MyCountry's civil air transport system is controlled and regulated by the CAA. The CAA has been established as an independent agency that no longer is under the jurisdiction of the Ministry of Transport (MoT). The director of the CAA is appointed by the country's president with the consent of the legislative body to serve for a 5-year period.

The CAA has a fairly simple structure. The agency is divided into six main divisions: Administration and Personnel, Airports, Budgeting and Finance, Operations, Safety & Security, and Foreign Affairs and Consumer Protection. The director is supported by a Legal Division, which also provides legal advice to all divisions.

CAA is an agency that depends entirely on the government allocation of funds and does not have financial autonomy. All revenues collected by CAA (for example, landing fees, rental payments for use of airport facilities by airlines, cargo companies, and others, concessions revenues, etc.) are channeled to the Treasury Department of the Ministry of Finance. Consequently, major financial constraints that affect the government trickle down to the CAA.

Regulatory Framework

The government has established that under a concession agreement, the regulatory oversight would remain the government's responsibility. However, it is understood that the concessionaire will be able to retain advisory status

concerning policy formulation directly affecting airport operations. The concessionaire would be entitled to receive two different revenue streams:

- Fixed revenue – an availability payment paid by CAA upon delivery of availability of all improvements.
- Variable revenue from:
  – Airside charges (for example, aircraft landing fees, passenger airport fees, fuel sales) which would be set by the concessionaire, but in line with the regional pricing mandate (agreement signed by MyCountry with neighboring countries)
  – Landside charges (for example, rental of airline offices and counters, rental of commercial space, parking) would be negotiated by concessionaire with tenants (airlines, cargo operators, and businesses).

The concession agreement would confer special rights to the government, such as approval rights for all major investments considered by the concessionaire, that may affect the provision of air operations, particularly navigation services, security and telecommunications.

Table A.1: Preliminary Risk Allocation Matrix - Airport Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Pre-contract risk						
Existing structure (refurbishment/ extensions)	Risk that the procurement process will experience any of the following: (a) failure to attract sufficient qualified bidders and/or responsive offers; or (b) prolonged and expensive negotiations; or (c)collapse of negotiations	Government	Government does not have a partner yet at this stage, so it has no option but to bear this risk.		Careful preparation and management of the procurement process Ensure that the agency's procurement team is experienced and competent Establish a procurement schedule commensurate with project complexity	Since there is no agreement yet signed with any other party, there is no specific allocation instrument, but the lack of recourse to any sort of compensation.
Site risk						
Existing structure (refurbishment/ extensions)	Risk that existing runway base and subbase are inadequate to withstand increased traffic and require re-construction (as opposed to rehab.)	Private	Private sector can manage cost-effectively if proper due diligence of existing structure is conducted.		CAA to commission expert testing of pavement structure prior to procurement initiation. CAA to give private firms enough time to study own site and construction plans	Contract clause requiring private partner to provide performance bond
Site Conditions	Risk that area where runway expansion is to take place present significantly different (weaker) geological conditions than terrain around existing runway	Private	Site study effort is moderate (runway expansion no more than 1 km long) and cost is not prohibitive for bidders		Private partner to rely on expert testing and due diligence CAA to give private firm enough time to conduct own site studies	Contract clause requiring private partner to provide performance bond

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Permits and approvals	Risk that construction license for runway expansion may be delayed by a municipality whose mayor opposes the project	Government	Permits and approvals may not be obtained prior to proposals due date CAA is better informed and positioned to influence the municipality		CAA to actively pursue negotiations with municipality – stress the benefits of the project to the population	Contract clause stipulating schedule for CAA to obtain license and defining liquidated damages payable to private partner in case of delays
Environmental liabilities created during operation	Risk that aviation fuel storage tanks corrode and spill, resulting in significant environmental liabilities	Private	Private partner is able to manage the use, maintenance and refurbishment of the asset according to the approved environmental management plan		During procurement private partner to demonstrate financial and technical capacity or support to deliver the site in acceptable condition at the end of the contract	Contract clause defining what constitutes environmental liabiity and the mechanism to estimate the private partner's liability and pursue payment
Cultural heritage	Risk that an archaeological discovery is made in area where runway is to be expanded	Government	CAA has a better understanding of procedures, and is in best position to manage risk		CAA to research cadastral records and obtain expert advice prior to proposal submission by bidders	Contract clause defining risk and stipulating site availability schedule and liquidated damages payable by CAA in case of delays
Design, construction & commissioning risk						
Design	Risk that the design of the new passenger terminal facility layout and baggage handling equipment do not meet international level of service (IATA) and security standards	Private - except where an express government mandated change has caused the design defect	Private partner has more experience, knowledge and control over the variables that determine the quality of the design.		Incorporate strict experience and competency requirements in the procurement process Private partner may transfer risk to builder/ architects and other subcontractors while maintaining primary liability	Contract clause defining performance standards and periodic monitoring by CAA, as well as penalties for not meeting standards Contract clause requiring performance bond Contract clause stipulating liquidated damages payable to CAA Contract clause to stipulate government compensation for CAA-originated change

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Construction	Risk that events occur during construction which prevent the airport new terminals and runway being delivered on time and on cost	Private, except when: The event is one of force majeure or government intervention	Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process (i.e. schedule, equipment, materials and technology, etc.)		CAA to incorporate strict experience and competency requirements in the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages Contract clause providing partial cost overrun guarantee for complex structures
Commissioning	Risk that either the physical or the operational commissioning tests for the new refrigerated terminal and the new passenger terminal baggage handling equipment cannot be successfully completed	Private – although CAA will assume an obligation to cooperate and facilitate prompt public sector attendance on commissioning tests	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk		Incorporate strict experience and competency requirements in the procurement process	Contract clause requiring a performance bond Contract clause stipulating liquidated damages (until all physical and operational commissioning tests passed)
Sponsor and financial risk						
Interest rates post-completion	Risk that after completion interest rates may move adversely	Private	Private partner in control of selecting and arranging long- term financing		Interest rate hedging instruments (for example, interest rate swap from IFC) Arrange financing using a mix of foreign and local currency	Contract clause holding government harmless
Exchange rate	Risk that during operation, exchange rates may move adversely, affecting the private partner's ability to	Shared ▪ CAA to assume part of it by allowing	Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing		Private to partially mitigate by financing part of the project in local currency	Contract clause requiring establishment of a Foreign Exchange Liquidity Facility Fee adjustment contract clause

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
	service foreign denominated debt and obtain its expected profit	total or partial indexing of aircraft landing fees and passenger terminal fees to exchange rate ▪ Private to assume remainder- possible pass - through to terminal tenants	Private can negotiate commercially with terminal tenants Government has more experience and information regarding the factors that influence exchange rates		Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's local currency revenues and foreign currency debt Government to transfer part of it to users by allowing total or partial indexing of payments to exchange rate	
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	Government	Government has more experience and information regarding the factors that influence currency convertibility		Purchase partial risk guarantee from an International Financing Institution	Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits
Inflation	Risk that value of availability payment, landing fees and passenger terminal fees received during the term is eroded by inflation	Shared ▪ CAA to assume part of it by inflation ▪ Private to assume remainder risk through the methodology adopted to maintain value	Government has more experience and information regarding the factors that influence inflation Private has some room to pass through some of the risk to terminal commercial users		CAA to transfer part of it to users by allowing total or partial indexing of payments to inflation rate CAA to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project it is not available then and in the amounts and on the conditions anticipated	Private	Private partner is responsible for arranging finance		Government requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions
Sponsor risk	Risk that financial demands on the private partner exceed its financial capacity causing corporate failure	Government	If risk materializes, there is no private partner to transfer the risk to		Ensure project is financially remote from external financial liabilities Ensure adequacy of finances under loan facilities or sponsor commitments supported by performance bond Ensure adequacy finances through the use of non financial evaluation criteria and due diligence on private partner	Contract clause requiring a performance bond and letters of credit Contract clause requiring minimum liquidity and debt ratios Contract clause giving CAA step-in rights in case of bankruptcy of private firm
Tax changes	Risk that before or after completion the tax imposed on the private firm, its assets or on the project, will change	▪ Private, if and when: Tax increases or new taxes arising from general changes in tax law ▪ Government, if and when:	General changes in tax law affect all businesses in the country CAA is in better position to influence specific discriminatory tax law changes affecting the project		Private partner to incorporate in project due diligence - financial returns of the private partner should be sufficient to withstand general tax law changes	Contract clause providing compensation terms for discriminatory changes in tax law Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
		Tax increases or new taxes arising from discriminatory changes in tax law (for example, new tax on airport operations)				
Operating risk						
Maintenance and Refurbishment	Risk that design and/or construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes		Private firm to manage through long term subcontracts with suitably qualified and resourced sub-contractors	Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications Contract clause requiring performance bond
Operator failure	Risk that the aviation fuel supplier may fail financially or may fail to provide contracted services to specification (leading to service unavailability and a need for alternate delivery arrangements with corresponding cost consequences)	Private, except when: ▪ Fuel supply or availability of fuel in the country is controlled by the government	Private partner is fully and primarily liable for all obligations to government If fuel supply is controlled by the government, CAA is better positioned to manage risk		CAA to carry out due diligence on principal subcontractors for probity and financial capacity and commission a legal review of the major subcontracts	Contract clause imposing penalties (and possible termination) for not meeting aviation fuel quality and availability specifications Contract clause requiring performance bond Contract clause stipulating that in case of failure the private partner may replace the supplier or government may require it

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Market demand						
Demand risk	Risk that operating revenues falls below forecast as a result of decrease in passenger or cargo traffic volume attributable to an economic downturn, tariff increases or change in consumer habits	Shared through a revenue mix of availability payments and traffic-derived revenue	Recognizing that airport landside and airside revenues are not enough to cover operational costs (and much less capital costs), the availability payment partially shields the private partner from this risk.		CAA and private to perform independent market demand analyses CAA to require bidders to demonstrate robust financial structure and financier support	Contract clause stipulating that CAA is to provide a fixed availability payment
User payment avoidance	Risk of a portion of users (airlines, passengers, and other tenants) not paying or evading payment, leading to a shortfall in cash flows	Private	Private sector has the ability to control and refuse service to non-paying users		Private partner to agree with airlines to have passenger fees collected at the time of ticket purchase.	Contract clause giving the ability to private partner to stop service to non-paying customers and stipulating the mechanisms available to collect payment.
Network and interface risk						
Withdrawal of support network	Risk that the CAA's national air traffic control system breaks down Risk that the CAA's national air traffic control system becomes obsolete and airlines start avoiding MyCountry as a destination	Government	CAA's Operations Division is in control of national air traffic control		Government to set up a sinking fund to be used to maintain and update the national air traffic control system	Contract clause specifying mechanisms to compensate private (for example, liquidated damages) for temporary disruptions and for long term reductions in air traffic resulting from equipment obsolescence.
Changes in competitive network	Risk that the government removes the designation of BIA as an international airport to favor the MyCapital airport as MyCountry's only international	Government	Competition is government- sponsored and subsidized CAA is in a position to influence or prevent the materialization of risk		CAA to conduct thorough network planning when developing project concept Private firm to review likely competition for service and barriers	Contract clause to provide private partner with non-compete protections, assurances of international air traffic rights, and compensation mechanisms

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
	airport, depriving BIA of high paying international aircraft and passengers.				to entry prior to enter agreement Private partner to seek compensation against change which unfairly discriminates against the project	
Interface (1)	Risk that airport competitiveness for cargo traffic (and demand) is affected by the inability of Immigration Services and National Customs Administration to sufficiently staff inspection facilities, resulting in long delays for passenger and goods clearance.	Government	Government manages Immigration Services and Customs Administration, activities, putting CAA in a much better position to manage the risk		Upfront assessment (by CAA, Immigration Services , Customs Administration and private partner) of likely interface issues with customs agency Continuous review and monitoring and development of a communications strategy regarding the operations of CAA, Customs and private partner	Contract clause to specify the circumstances that constitute risk and merit compensation (for example, staffing levels, clearance time) Contract clause defining compensation mechanism for private partner
Industrial relations risk						
Industrial relations	Risk of a strike by airport or airline staff Risk of a strike by air traffic controllers	Private, if airport or airline staff Government, if air traffic controllers	Private partner has better information about and control over the causes of airport or airline strike CAA has better information about, and control over, the causes of air traffic control staff		Private partner (or its sub-contractors) manage project delivery and operations CAA manage air traffic control	Contract clause defining circumstances and requiring payment of liquidated damages to CAA Contract clause defining circumstances and requiring payment of liquidated damages to private partner

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Legislative and government policy risk						
Changes in law/policy	Risk of a change in law/policy of government (after the contract has been signed), requiring new, highly sophisticated and expensive, security equipment to be deployed at airports	Government	Government has more information about the likelihood and consequences of such a change		Government to monitor and limit (where possible) changes which may have these effects or consequence on the project	Contract clause allowing compensation to private in a pre-specified manner or requiring CAA to pay for such changes
Regulation	Risk that Regulatory Commission, as a result of a regional pricing mandate change, imposes a decrease in BIA's airside fees that significantly affects the financial returns to the private partner	Private	The private partner has the ability to undertake its own assessment of the regulatory system and the regional pricing policies and history		Private partner to assess regulatory system and make appropriate representations	Contract clause specifying that tariffs are subject to regulatory changes in accordance with the regional mandate and the Regulatory Commission.
***Force majeure* risk**						
Force majeure	Risk that runway suffers structural damage as a result of an earthquake, stopping all air traffic for days	Private to buy insurance and take risk of loss or damage to the asset and loss of revenue (insurable risks)	Private partner can buy insurance from the marketplace		Private to purchase insurance for insurable risks	Contract clauses to: Expressly define events that will constitute acts of God and political force majeure events Relieve private from consequences of service discontinuity; Require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and CAA is to be given the benefit of insurance for service disruption costs

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Asset ownership risk						
Default and termination	Risk of private partner going bankrupt and stopping work in the facility prior to completion, to a point that the contract is terminated	Private partner to take the risk of loss of value on termination	Private partner has more knowledge of the underlying causes of default and can identify risk earlier than government		Only serious breaches by the private partner to lead to termination Private partner to be given time and opportunity to remedy defaults by the private partner which may lead to termination CAA to require step in rights to ensure access and service continuity until ownership/control issues are resolved	Contract clause clearly establishing specific contract breaches leading to termination Contract clause to define options for remediation of default

A.2 Transport – Mass Transit

Project Description

The Metropolitan Transportation Authority (MTA) of the City of MyCapital is interested in implementing a new light rail line along a 17 km stretch of one of MyCapital's busiest thoroughfares. The new line is also known as the Silver Line and will be located in MyCity's densely built west side. MTA is interested in implementing the Silver Line project using a PPP for the provision of infrastructure only, since it is already leasing rolling stock for the rest of the system. Hence, the Silver Line light rail PPP project will involve the financing, designing, constructing, and maintaining of the new rail line over a 20 year period.

The line is expected to serve a demand of about 300,000 passengers per day (ppd) at start-up and this demand is expected to reach 500,000 ppd within 10 years and stabilize at 600,000 ppd by year 15 and through the end of the concession period. The Silver Line is also expected to significantly relieve traffic congestion on the road corridor, and consequently reduce average travel time for transit users by 30 percent.

The scope of the infrastructure investment required includes:

- Construction of 17 km of elevated double track (including track, power, electrical/mechanical systems, and signaling & communications)- $600.0 million
- Construction of two terminals, 10 intermediate stations, one depot and other related maintenance and operation facilities (including land)- $350.0 million.

The scope of services to be provided by the private partner include:

- Design and development
- Construction, test, integration and commissioning, and safety
- Maintenance and renewals

The MTA will be responsible for managing key project interfaces, including:

- Physical and functional interfaces: civil works, existing stations and terminals on other lines, control center
- Operational: central control, timetabling, and safety

The private partner would be compensated through availability payments that will be initiated only after availability is delivered, providing an incentive to open the line as fast as possible. Payments are to be adjusted on the basis of an agreed upon definition of availability that allows for facility maintenance and rehabilitation. MTA to absorb demand risk with a commitment to pay for

infrastructure renewal costs above specified tonnages (i.e. traffic exceeding forecast, accelerating wear and tear of facility).

The Project will be developed and procured following the solicited proposal process prescribed under the BOT Law and its Implementing Rules and Regulations (IRR).

Project Rationale

As a result of a booming economy, and as many capitals in the developing world, MyCapital has experienced an exponential population growth. The government has not been able to keep up with the cost of funding urban infrastructure and the provision of transit services. The lack of infrastructure investment, coupled with the ever increasing motorization of the population, has resulted in a serious congestion and air pollution problem. The average commute for workers in the services sector, MyCity's most important economic engine, has increased from 30 minutes to over two hours in the last seven years.

The MTA is responsible for managing a light rail transit system consisting of 4 lines with a total length of 50 km. The system has been operating with relative efficiency for about 15 years, as MTA has been able to cover the cost of maintaining, replacing and adding rolling stock through a combination of fare collection revenue and an annual allocation from the national budget that is calculated based on the number of passengers moved per year. However, under this funding arrangement MTA has not been able to fund the up-front cost of the expansion of the infrastructure network.

Besides being one of MyCity's busiest thoroughfares, the corridor where the Silver Line is to be located is one of the newest, and has a wide median and enough right-of-way to accommodate the proposed elevated double track. The proposed Silver Line corridor is currently served by an assortment of unregulated old buses, vans, and informal taxi providers. This arrangement worked relatively efficiently when traffic volumes on the corridor were not substantial. However, unregulated providers currently "compete" against each other for passengers on the street, resulting in an inefficient, unsafe, and highly polluting operation. The corridor has also been the preferred location in MyCity (and possibly in the region) for call centers. However, if a more sustainable transportation system is not implemented on this important corridor, the status of MyCity as the call center location of choice will likely be severely hampered.

Metropolitan Transportation Authority

MyCity's public transport system is regulated by the MTA. The MTA is an autonomous municipal agency, with its own independent budget, funded

through a combination of licensing fees, fare box revenue collection, and a direct allocation of transit operations funds from the national budget. The MTA regulates the licensing of private taxis and bus routes operating in the city, and has the right to confiscate vehicles of unlicensed public transportation service providers. However, given the severe limitations that MTA faces in expanding transportation infrastructure and services, it has rarely penalized informal or unlicensed transportation service operations. The MTA also operates the city's light rail network and a limited publicly-owned bus system. The director of the MTA is appointed by the Mayor of MyCity's with the consent of the City Council to serve for a 3-year period.

The MTA has a fairly simple structure. The agency is divided into seven main divisions: Administration and Personnel; Budgeting and Finance; Legal; Planning; Light Rail Operations and Maintenance; Bus System Operations and Maintenance; and Licensing.

Regulatory Framework

The MTA is responsible for issuing taxi and bus service licenses, regulating transit and taxi fares, and major bus routes. However, the Silver Line infrastructure concessionaire is to be insulated from fare policy as its compensation will be through an agreed-upon availability payment. In case of traffic exceeding the forecast (as measured by tonnage per kilometer), MTA is to provide additional compensation for increased maintenance and rehabilitation costs (as measured by an agreed upon formula).

Table A.2: Preliminary Risk Allocation Matrix - Mass Transit Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Pre-contract risk						
Site conditions	Risk that area where the elevated track foundation and stations will be built to support the structure, presents significantly different (weaker) geological conditions than expected during feasibility stage	Private	The size of the area where the foundation will be located is relatively small, and located on the median of an existing road, for which geotechnical studies already exist. Site study effort is moderate; its cost will likely to be small		Private partner to rely on expert testing and due diligence MTA to give private firm enough time to conduct own site studies during bidding stage	Contract clause requiring private partner to provide performance bond to cover delay in constructions milestones or commercial operations date Availability payment upon delivery of infrastructure provides an incentive for early completion
Permits and approvals	Risk that building permit from local authorities is delayed	MTA	MTA is best placed to influence the decision of other government officials that issue these permits and approvals		MTA should obtain, prior to bidding, building approval in principle from local authorities	Contract clause stipulating deadline by which building approval is granted and defining remedies in favor of private firm in case of delay
Environmental liabilities created during operation	Risk of chemical spills in depot maintenance area.	MTA	MTA will be responsible for rolling stock maintenance		Ensure that MTA operations and maintenance staff are experienced and/or receive adequate training	Contract clause defining what constitutes environmental liability and who is responsible for each liability identified.
Design, construction & commissioning risk						
Design	Risk that the design of the infrastructure (track, electrical/ mechanical, communications) do not meet technical	Private –except where an express government mandated change has caused the design defect	Private partner has more experience, knowledge and control over the variables that determine the quality of the design		Incorporate strict experience and competency requirements in the procurement process	Contract clause defining performance standards and periodic monitoring by MTA, as well as penalties for not meeting standards

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
	specifications needed for the system to operate and integrate with existing lines.				Private partner may transfer risk to builder/ engineers and other subcontractors while maintaining primary liability	Contract clause requiring performance bond Contract clause stipulating liquidated damages payable to MTA Contract clause to stipulate government compensation for MTA-originated change
Construction	Risk that events occur during construction which prevent infrastructure availability from being delivered on time and on cost	Private, except when: The event is one of force majeure or government intervention	Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process (i.e. schedule, equipment, materials and technology, etc.)		MTA to incorporate strict experience and competency requirements in the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages Availability of payment upon delivery of infrastructure provides an incentive for early completion
Commissioning	Risk that either the physical or the operational commissioning tests for the infrastructure and systems cannot be successfully completed	Private, except when: When failure is attributed to deficiencies in MTA's rolling stock operation	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk		Incorporate strict experience and competency requirements in the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages (until all physical and operational commissioning tests passed) Availability of payment upon delivery of infrastructure provides an incentive for early completion
Sponsor and financial risk						
Interest rates post-completion	Risk that after completion interest rates may move adversely	Private	Private partner in control of selecting and arranging long- term financing		Interest rate hedging instruments (for example, interest rate swap from IFC Arrange financing using a mix of foreign and local currency	Contract clause holding government harmless

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Exchange rate	Risk that exchange rates move adversely, affecting the private partner's ability to service foreign denominated debt and obtain its expected return on capital	Shared ▪ MTA to assume part of it by allowing total or partial indexing of availability payment to exchange rate ▪ Private to assume remainder	Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing Government has more experience and information regarding the factors that influence exchange rates		Private to partially mitigate by financing part of the project in local currency Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's local currency revenues and foreign currency debt Government to transfer part of it to users by allowing total or partial indexing of payments to exchange rate	Contract clause requiring establishment of a Foreign Exchange Liquidity Facility Foreign exchange adjustment to rates in contract clause
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	Government	Government has more experience and information regarding the factors that influence currency convertibility		Purchase partial risk guarantee from an International Financing Institution	Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits
Inflation	Risk that inflation increases at a higher than expected rate	Shared ▪ MTA to assume part of it by allowing total or partial indexing of availability payment to inflation ▪ Private to assume remainder risk (if any)	Government has more experience and information regarding the factors that influence inflation		MTA to transfer part of it to users by adjusting retail rates by inflation MTA to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project it is not available then and in the amounts and on the conditions anticipated	Private	Private partner is responsible for arranging finance		Government requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions
Sponsor risk	Risk that financial demands on the private firm exceed its financial capacity causing bankruptcy	Government	If risk materializes, there is no private firm to transfer the risk to		Verify financial strength and track record of shareholders of private firm During bidding stage, reject those with a weak financial profile Required periodic financial reporting by private firm	Contract clause requiring a performance bond and letters of credit Contract clause giving MTA step-in rights in case of bankruptcy of private firm
Tax changes	Risk that before or after completion the tax rate on the private firm, its assets or on the project, will change	Government	Private firm has no influence over change in tax law		Seek guarantee from national government for changes in law	Contract clause providing compensation terms for changes in tax law Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available Performance undertaking from national government covering termination payment due to change in tax law

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Operating risk						
Maintenance and Refurbishment	Risk that design and/or construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes		Private firm to manage through long term subcontracts with suitably qualified and re-sourced sub-contractors	Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications Contract clause requiring performance bond Contract defining performance regime, based on system availability and reliability, is the basis of the payment stream
Operator failure	Risk that the infrastructure works (i.e. track, power, electrical/mechanical, signaling and communications), terminals, stations, or any of the associated facilities fail to operate according to specifications	Private, except when: Failure is caused by MTA action	Private firm is able to influence and control the operations of all assets and facilities		Private firm to require warranties from contractors and suppliers Private firm to develop operating manuals and recruit based on the experience managers operators	Contract clause imposing penalties (and possible termination) for not meeting service specifications, with availability payment based on the performance of the system during revenue operation Contract clause requiring performance bond
Market demand risk						
Demand risk	Risk that ridership demand on the line is lower than expected	MTA	Private firm has no influence or control of ridership demand		MTA to carryout demand studies to determine if forecasted demand is consistent with the required capacity of the plant	Contract clause stipulating fixed payments for making infrastructure available

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Payment risk	Risk of MTA not making availability payments to private firm on time or for the full amounts, including buyout and termination payment	Shared	MTA has direct influence and control over this risk, but if it is incapable of paying, the residual risk will be borne by private party		Private will carry out detailed credit analysis of MTA prior to bidding MTA to introduce, if needed, credit enhancement instruments such as escrow or revenue accounts.	Contract clause defining mechanics of credit enhancement instruments.
Network and interface risk						
Withdrawal of support network	Risk of power outages, preventing train operations	Private	Private partner is in control of design and can incorporate in design auxiliary power units		Conduct due diligence of power conditions on the network	Contract clause specifying mechanisms to compensate MTA for temporary disruptions
Interface	Risk that trains will not work on new infrastructure and/ or that power, mechanical/ electrical systems, communications systems will not be compatible with existing MTA systems	Private	Private has control and influence over infrastructure design and an obligation to meet technical specifications provided by MTA		MTA to provide bidders the exact specifications of the rolling stock, power, mechanical and electrical systems required for its trains to operate	Contract clause imposing penalties (and possible termination) for not meeting service specifications, with availability payment based on the performance of the system during revenue operation
Industrial relations risk						
Industrial relations	Risk of a strike by private firm staff Risk of a strike by MTA staff	Private, if private firm staff MTA, if MTA staff	▪ Private partner has better information about and control over the causes of strike by its own staff ▪ MTA has better information about, and control over, the causes of strike by its own staff		Private partner (or its sub-contractors) manage project delivery and operations	Contract clause defining circumstances and requiring payment of liquidated damages to MTA Contract clause defining circumstances and requiring payment of liquidated damages to private partner

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Legislative and government policy risk						
Changes in law/policy	Risk of a change in law/policy of government (after the contract has been signed), requiring new, highly sophisticated and expensive, security equipment to be deployed at train stations and terminals	MTA	Government has more information about the likelihood and consequences of such a change		Seek a guarantee from the national government	Contract clause allowing compensation to private in a pre-specified manner or requiring MTA to pay for such changes
Force majeure risk						
Force majeure	Risk that facilities suffer structural damage as a result of an earthquake or another natural disaster, stopping the operations of trains or causing disruption of operation	Private to buy insurance and take risk of loss or damage to the asset and loss of revenue (insurable risks)	Private firm can buy insurance from the marketplace		Private to purchase insurance for insurable risks	Contract clauses to: ▪ Expressly define events that will constitute acts of God and political force majeure events ▪ Relieve private from consequences of service discontinuity; ▪ Require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and MTA is to be given the benefit of insurance for service disruption costs

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Asset ownership risk						
Default and termination	Risk of private firm going bankrupt and stopping work in the facility prior to completion, to a point that the contract is terminated	Private firm to take the risk of loss of value on termination	Private firm has more knowledge of the underlying causes of default and can identify risk earlier than government		Only serious breaches by the private partner to lead to termination Private partner to be given time and opportunity to remedy defaults by the private partner which may lead to termination MTA to require step in rights to ensure access and service continuity until ownership/control issues are resolved	Contract clause clearly establishing specific contract breaches leading to termination Contract clause to define options for remediation of default

A.3 Bulk water supply

Project Description

The Metropolitan City Water District (MCWD) is interested in structuring a BOT-PPP arrangement to supply of up to 40,000 cubic meters per day of bulk potable water to the MCWD distribution system. The Project will involve financing, designing, constructing, owning, operating and maintaining raw water abstraction, treatment and transmission facilities intended to extract and treat raw water from the river located in the Nearby Municipality. The estimated investment requirement is PhP 3 billion.

The Project will be developed and procured following the solicited proposal process prescribed under BOT Law and its Implementing Rules and Regulations (IRR).

Project Rationale

Metro City currently experiences an acute water shortage problem. At present, MCWD serves approximately 40% of demand in Metro City, with the rest being served by informal suppliers and self-supply. This is largely due to inadequacy of funds available for investment, and limited viable sources of bulk water. Upon implementation, the Project will involve the first development of a major surface water source in the Metro City area and will increase the water available to MCWD by about 25%.

Metro City Water District

MCWD is one of the best performing government-owned water utilities in the Philippines, and charges a cost-recovery tariff, reports net profit and collects 100% of revenues billed. MCWD's unaccounted for water is only 32%, lower than most water utilities in the region.

MCWD's net profit margin is about 10% and return on assets is about 3%. It has outstanding debt of about PhP 1.3 billion and a strong debt servicing record.

Regulatory Framework

The National Water Regulatory Board (NWRB) is responsible for regulating retail and bulk water tariffs. NWRB is responsible for the issuance, renewal and revocation of water permits. The Local Water Utilities Agency (LWUA) has the right to review tariffs charged by water utilities that have outstanding loans with it. As MCWD's outstanding debt with LWUA has been retired recently, LWUA regulatory powers with respect to MCWD have diminished. Rules for retail rate-setting are prescribed by PD 198 and provide for cost recovery.

Table A.3: Preliminary Risk Allocation Matrix – Bulk Water Supply Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Pre-contract risk						
Site conditions	Risk that area where abstraction structure, water treatment plant and transmission pipe presents significantly different (weaker) geological conditions than expected during feasibility stage	Private	Site study effort is moderate (area covered by abstraction, treatment and transmission works is less than 1km^2) and therefore cost of site study is small		Private partner to rely on expert testing and due diligence MCWD to give private firm enough time to conduct own site studies during bidding stage	Contract clause requiring private partner to provide performance bond to cover delay in constructions milestones or commercial operations date
Permits and approvals	Risk that water permit from NWRB or building permit from local authorities is delayed	MCWD	MCWD is best placed to influence the decision of other government officials that issue these permits and approvals		Water permit should be obtained by MCWD prior to bidding. MCWD should obtain, prior to bidding, building approval in principle from local authorities	Contract clause stipulating deadline by which building approval is granted and defining remedies in favor of private firm in case of delay
Environmental liabilities created during operation	Risk of over abstraction of water from river to the extent that it has significant environmental damage; or risk of damage to storage tanks of waste from	Private	Private firm is able to manage the abstraction of water, and use, maintenance and refurbishment of the asset according to the approved environmental management plan		During procurement private firm to demonstrate financial and technical capacity to comply with environmental regulations	Contract clause defining what constitutes environmental liability and the mechanism to estimate the private firm's liability and pursue payment
Design, construction & commissioning risk						
Design	Risk that the design of the facilities do not meet technical specifications needed to meet the water supply standards (capacity and quality)defined for the plant	Private –except where an express government mandated change has caused the design defect	Private partner has more experience, knowledge and control over the variables that determine the quality of the design		Incorporate strict experience and competency requirements in the procurement process Private partner transfer risk to builder/architects	Contract clause defining performance standards and periodic monitoring by MCWD, as well as penalties for not meeting standards

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
					and other subcontractors while maintaining primary liability	Contract clause requiring performance bond Contract clause stipulating liquidated damages payable to MCWD Contract clause to stipulate government compensation for MCWD-originated change
Construction	Risk that events occur during construction which prevent abstraction works, treatment plant or transmission line being delivered on time and on cost	Private, except when: ▪ The event is one of force majeure or government intervention	Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process (i.e. schedule, equipment, materials and technology, etc.)		MCWD to incorporate strict experience and competency requirements in the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages
Commissioning	Risk that either the physical or the operational commissioning tests for the abstraction works, treatment plant of transmission line cannot be successfully completed	Private – although MCWD will assume an obligation to cooperate and facilitate prompt public sector attendance on commissioning tests	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk		Incorporate strict experience and competency requirements in the procurement process	Contract clause requiring a performance bond Contract clause stipulating liquidated damages (until all physical and operational commissioning tests passed)
Sponsor and financial risk						
Interest rates post-completion	Risk that after completion interest rates may move adversely	Private	Private partner in control of selecting and arranging long-term financing		Interest rate hedging instruments (for example, interest rate swap from IFC)	Contract clause holding government harmless

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
					Arrange financing using a mix of foreign and local currency	
Exchange rate	Risk that exchange rates move adversely, affecting the private partner's ability to service foreign denominated debt and obtain its expected return on capital	Shared ▪ MCWD to assume part of it by allowing total or partial indexing of bulk water rate to exchange rate ▪ Private to assume remainder	Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing Government has more experience and information regarding the factors that influence exchange rates		Private to partially mitigate by financing part of the project in local currency Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's local currency revenues and foreign currency debt Government to transfer part of it to users by allowing total or partial indexing of payments to exchange rate	Contract clause requiring establishment of a Foreign Exchange Liquidity Facility Foreign exchange adjustment to rates in contract clause
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	Government	Government has more experience and information regarding the factors that influence currency convertibility		Purchase partial risk guarantee from an International Financing Institution	Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits
Inflation	Risk that inflation increases at a higher than expected rate	Shared ▪ MCWD to assume part of it by allowing total or partial indexing of rates to inflation ▪ Private to assume remainder risk	Government has more experience and information regarding the factors that influence inflation Private has some room to pass through some of the risk to terminal commercial users		MCWD to transfer part of it to users by adjusting retail rates by inflation MCWD to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project it is not available then and in the amounts and on the conditions anticipated	Private	Private partner is responsible for arranging finance		Government requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions
Sponsor risk	Risk that financial demands on the private firm exceed its financial capacity causing bankruptcy	Government	If risk materializes, there is no private firm to transfer the risk to		Verify financial strength and track record of shareholders of private firm during bidding stage and reject those with a weak financial profile Required periodic financial reporting by private firm	Contract clause requiring a performance bond and letters of credit Contract clause giving MCWD step-in rights in case of bankruptcy of private firm Contract clause requiring minimum liquidity and debt ratios
Tax changes	Risk that before or after completion the tax rate on the private firm, its assets or on the project, will change	Government	Private firm has no influence over change in tax law		Seek guarantee from national government changes in law	Contract clause providing compensation terms for changes in tax law Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available Performance undertaking from national government covering termination payment due to change in tax law

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Hydrology and raw water quality risk						
Hydrology risk	Risk that the flow of water in the river, at any given time, is insufficient to meet the needs of the private firm	Private, if private define source of water, location of intake and capacity of plant MCWD, if private define source of water, location of intake and capacity of plant	Whomever define the source of water, location of intake point and capacity of the plant should bear this risk because they have the choice of the key factors that mitigate hydrology risk		Private firm or MCWD to manage by carrying out in-depth hydrology studies and analysis and by incorporating safety factors when choosing the capacity of the plant	If private firm bearing risk, contract clauses stipulating all payment on a liquidated damages in case volume of water treated is below that required by MCWD If MCWD bearing risk, contract clauses specifying fixed payments based on capacity available, and variable on actual water produced
Raw water quality deterioration	Risk that the quality of water at the riveris at level below it is treatable by the treatment plant	Shared	Private firm nor MCWD have direct control over the quality of raw water, but both should have some incentive to perform best efforts to avoid a damage in quality event		Private firm should periodically test the quality of raw source and take action to restrict access to the river in the vicinity of the plant MCWD to work with river basin administration authorities to take actions to control level of contamination of the river	Contract clauses that define raw water quality standards and the level below which it will be considered an event of deterioration in raw water quality Contract clause that splits cost of inability of private firm to produce water in the event the quality of raw deteriorates
Operating risk						
Maintenance and Refurbishment	Risk that design and/or construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes		Private firm to manage through long term subcontracts with suitably qualified and resourced sub-contractors	Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications Contract clause requiring performance bond

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Operator failure	Risk that the abstraction works, treatment plant or transmission lines, or any of the associated facilities fail to operate according to specifications	Private, except when: Failure is caused by MCWD action	Private firm is able to influence and control the operations of all assets and facilities		Private firm to require warranties from contractors and suppliers Private firm develop operating manuals and recruit experienced managers and operators	Contract clause imposing penalties (and possible termination) for not meeting service specifications Contract clause requiring performance bond
Market demand risk						
Demand risk	Risk that demand for bulk water falls expected levels	MCWD	Private firm has no influence or control of demand for bulk water		MCWD to carry out demand studies to determine if forecasted demand is consistent with the required capacity of the plant	Contract clause stipulating fixed payments for making capacity available and variable payments for actual volume of water treated
Network and interface risk						
Interface	Risk that MCWD's distribution system is unable to accept all or part of the water from the private firm's transmission pipe	MCWD	MCWD has control and influence over the availability and capacity of the distribution system		MCWD to analyze existing capacity of distribution network to accept water from treatment plant and to develop a plan for rehabilitating and expanding the network in case it is needed, as well as financing the investments related to that expansion and rehabilitation	Contract clause defining fixed capacity payments to private firm, and variable payment at a predefined volume in case of interface risk
Industrial relations	Risk of a strike by private firm staff Risk of a strike by MCWD staff	Private, if private firm staff MCWD, if MCWD staff	Private partner has better information about and control over the causes of strike by its own staff		Private partner (or its sub-contractors) manage project delivery and operations	Contract clause defining circumstances and requiring payment of liquidated damages to MCWD

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Industrial relations risk						
			MCWD has better information about and control over the causes of strike by its own staff			Contract clause defining circumstances and requiring payment of liquidated damages to private partner
Legislative and government policy risk						
Changes in law/policy	Risk of a change in law/ policy of government (after the contract has been signed), requiring new, highly sophisticated and expensive, water testing equipment	MCWD / national government	Government has more information about the likelihood and consequences of such a change		Seek a guarantee from the national government	Contract clause allowing compensation to private in a pre-specified manner or requiring MCWD to pay for such changes Performance undertaking from national government
Regulation	Risk that NWRB imposes changes to bulk water rates or service specifications define in contract	MCWD	Private firm has no control or influence over the NWRB		MCWD to seek a legal opinion from the NWRB prior to bidding on the terms of the contract	Contract clause specifying compensation to private firm in case of regulatory decisions that have an adverse effect on cashflow of private firm.
Force majeure risk						
Force majeure	Risk that facilities suffer structural damage as a result of an earthquake or another natural disaster, stopping treatment of water for days	Private to buy insurance and take risk of loss or damage to the asset and loss of revenue (insurable risks)	Private firm can buy insurance from the marketplace		Private to purchase insurance for insurable risks	Contract clauses to: Expressly define events that will constitute acts of God and political force majeure events Relieve private from consequences of service discontinuity;

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
						Require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and MCWD is to be given the benefit of insurance for service disruption costs
Asset ownership risk						
Default and termination	Risk of private firm going bankrupt and stopping work in the facility prior to completion to a point that the contract is terminated	Private firm to take the risk of loss of value on termination	Private firm has more knowledge of the underlying causes of default and can identify risk earlier than government		Only serious breaches by the private partner to lead to termination Private partner to be given time and opportunity to remedy defaults by the private partner which may lead to termination MCWD to require step in rights to ensure access and service continuity until ownership/control issues are resolved	Contract clause clearly establishing specific contract breaches leading to termination Contract clause to define options for remediation of default

A.4 Information Technology

Project Description

The National Civil Registry Agency (NCRA) of MyCountry is interested in structuring a PPP type arrangement to implement an information technology solution to automate and improve the efficiency and integrity of the civil registration process. The project cost is estimated at about US$80 million and the proposed Build-Transfer-Operate contract is expected to last anywhere between 10 and 12 years. The private partner will be expected to finance, design, implement, operate and maintain the system. The project, entitled Civil Registry Information Technology Project (CRITP), consists of four phases:

- Design, develop, install, successfully test, integrate, operate and maintain the CRITP in compliance with the technical requirements and specifications agreed upon in the contract, at its own cost
- Provide at least one system hardware upgrade during the course of the contract
- Automating the process of issuing, authenticating, and certifying civil registration documents through the creation of a series of linked databases
- Converting more than 50 million paper documents into microfilm, and over 120 million microfilmed documents into digital format
- Establishing CRITP service offices nationwide. These offices are to be linked by Wide Area Network to the NCRA central facility in MyCapital, and will enable office staff to search, issue, authenticate and certify civil registration documents electronically
- Developing application and support systems that will run the CRITP.

Under the BTO agreement, the private partner is to deliver the completed CRITP system to NCRA, including converting existing documents to digital format. The NCRA provides an automated civil registration service to consumers. The contract will require NCRA to:

- Collect user fees and subsequently remit a percentage of the fee to the private partner. The remainder of the fee accrues to NCRA and is automatically remitted to the National Treasury
- Provide a minimum number of support staff for system implementation, designate regional coordinators, and hire frontline customer service staff on behalf of the private partner

Project Rationale

The NCRA is the agency of the MyCountry government responsible for collecting, compiling and providing civil registration data and legal documents. It maintains a national archive of civil registration documents and is the primary

outlet for citizens to request copies of these legal documents. The NCRA archiving and retrieval processes are largely manual, with warehouses of paper documents and an overworked staff that led to significant delays in the issuance of citizen's document requests. Additionally, demand for civil registration documents has significantly increased driven by a significant number of MyCountry citizens who have emigrated abroad seeking work opportunities.

In response to the increased demand, delays, and increasing concerns about the authenticity of civil registry documents, the NCRA decided to embark on a computerization project aimed at improving the efficiency and integrity of the civil registration process. After several requests for national government investment in NCRA's computer systems which were met only by small sums that the agency deemed insufficient, NCRA management made the decision to pursue a privately financed overhaul of the agency's technology systems to meet the growing demand for documents.

After conducting a feasibility study and with technical assistance from the National Information Technology Center (NITC), NCRA chose to pursue a BTO agreement. NCRA wanted to make sure that the system was reliable and properly-maintained in the short term, and that NCRA staff gained the technical capacity to operate the system in the long term. A BTO structure was chosen because the nature of the documents is sensitive. The NCRA preferred to have ownership of the system and the database as soon as it was completed, to allay any concerns that would arise if a private company actually had ownership of the system that stores these sensitive documents.

National Civil Registry Agency

The NCRA is a national government agency that collects revenue from user fees for processing civil registry documents (i.e. birth, death and marriage certificates). Since NCRA revenue is sent straight to the National Treasury, the agency's operational budget depends on annual national budget allocations. NCRA revenue for services is very reliable, and demand for its services is fairly inelastic, given the increased demand for authenticated civil registry documents, and the monopoly status that the NCRA enjoys. NCRA currently operates from a central facility in MyCapital and has established agreements with local governments in the rest of the country to process user requests locally, in exchange for a fee.

Regulatory Framework

NCRA is responsible for setting rates for civil registry document issuance, certification and authentication. There are no rules or guidelines on how NCRA would set these standards and tariffs.

Table A.4: Preliminary Risk Allocation Matrix – Information Technology Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Pre-contract risk						
Site conditions	Risk that unanticipated adverse site conditions (for example, building where systems are to be located) are discovered which cause implementation costs to increase and/or cause construction delays	Private	Private sector can manage cost- effectively if allowed to conduct a site visit during the bidding stage and if all the site plans are provided to him/her		Allow private firm enough time to visit site studies and obtain site plans	Contract clause requiring private partner to provide performance bond
Permits and approvals	Risk that necessary approvals (for example, to access personal confidential records)may not be obtained or may be obtained only subject to unanticipated conditions which have adverse cost consequences or cause prolonged delay	NCRA	NCRA is better informed and positioned to influence the speed of the approval process, particularly in situations that are complex or sensitive		NCRA to obtain in advance of the bidder proposal submission stage the requisite permits and approvals, which would allow the private firm to achieve a measure of pre-contractual certainty and an early start to the approval process	Contract clause stipulating the schedule to obtain permits and approval and stipulating liquidated damages payable to private partner in case of delays
Environmental liabilities created during operation	Risk that the use of the project site over the contract term has resulted in significant environmental liabilities (clean up or rehabilitation required to make the site fit for future anticipated use)	Not applicable				
Cultural heritage	Risk of costs and delays associated with archaeological and cultural heritage discoveries	Not applicable				

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Availability of site	Risk that tenure/access to a selected site which is not presently owned by government or private partner cannot be negotiated. Risk of costs and delays in negotiating land acquisition	Not applicable				
Design, construction and commissioning risk						
Design	Risk that the design of the system is substandard, or incapable of delivering the services at anticipated cost and specified level of service (resulting in long term increase in recurrent costs and long term inadequacy of service)	Private – private partner will be responsible except where an express government mandated change has caused the design defect	Private partner has more experience, knowledge and control over the variables that determine the quality of the design (i.e. experience, competent staff, etc.)		▪ Incorporate strict experience and competency requirements in the procurement process ▪ Ensure that terms of reference require a thorough requirements analysis and the development of a concept of operations prior to full scale deployment ▪ Ensure all stakeholders provide input into the requirements analysis	▪ Contract clause requiring performance bond ▪ Contract clause stipulating liquidated damages ▪ Contract clause requiring NCRA approval of concept of operations prior to full scale deployment
Construction	Risk that events occur during system development and deployment which prevent the system being delivered on time and on cost	Private, except when: The event is one for which relief as to time or cost or both is specifically granted under the contract, such as force majeure or government intervention (for	Private partner has more experience, knowledge and control over the variables that influence system development and implementation cost and control over development and implementation process (i.e. schedule, equipment,		▪ Incorporate strict experience and competency requirements in the procurement process ▪ Ensure that terms contract clause of reference require a thorough requirements analysis and the development of a concept of operations to full scale deployment	▪ Contract clause requiring performance bond ▪ Contract clause stipulating liquidated damages to protect the government

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
		example, customs agency preventing importation of equipment)	technology, etc.) – this assumes that private partner has enough information to estimate costs and start operations on schedule and as planned. A possible exception is in contractually agreed upon situations that classify as force majeure or government intervention.			
Commissioning	Risk that either the system commissioning tests which are required to be completed for the provision of services to commence, cannot be successfully completed	Private – although NCRA will assume an obligation to cooperate and facilitate prompt public sector attendance on commissioning tests	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk		▪ Incorporate strict experience and competency requirements in the procurement process ▪ Ensure that proposed approach follows a systems engineering approach with key milestones for system validation, system verification and system testing plan	▪ Contract clause requiring a performance bond ▪ Contract clause stipulating liquidated damages (until all system commissioning tests have passed)
Sponsor and financial risk						
Interest rates pre-completion	Risk that prior to completion local currency interest rates may move adversely	NCRA	Government has more experience and information regarding the factors influencing local currency interest rates and is in better position to manage risk		Construction loan interest rate hedging instrument (if and when available)	Contract clause defining mechanism to compensate private for interest rate changes during system development

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Interest rates post-completion	Risk that after completion interest rates may move adversely	NCRA	Private partner in control of selecting and arranging long-term financing		▪ Interest rate hedging instruments (for example, interest rate swap from IFC) ▪ Arrange financing using a mix of foreign and local currency	Contract clause holding government harmless
Exchange rate	Risk that during operation, exchange rates may move adversely, affecting the private partner's ability to service foreign denominated debt and obtain its expected profit	▪ Shared – NCRA to assume part of it by allowing total or partial indexing of payments to exchange rate – Private to assume remainder	Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing Government has more experience and information regarding the factors that influence exchange rates		▪ Private to partially mitigate by financing part of the project in local currency ▪ Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's local currency revenues and foreign currency debt ▪ NCRA to transfer part of it to users by allowing total or partial indexing of payments to exchange rate	▪ Contract clause requiring establishment of a Foreign Exchange Liquidity Facility ▪ Tariff or payment adjustment contract clause
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	NCRA	Government has more experience and information regarding the factors that influence currency convertibility		NCRA to purchase partial risk guarantee from an International Financing Institution	▪ Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Inflation	Risk that value of payments received during the term is eroded by inflation	▪ Shared – NCRA to assume part of it by allowing total or partial indexing of payments to inflation – Private to assume remainder risk through the methodology adopted to maintain value	Government has more experience and information regarding the factors that influence inflation		NCRA to transfer part of it to users by allowing total or partial indexing of payments to inflation rate NCRA to ensure its payments do not over compensate for inflation and to avoid any double payment for after cost adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project is not available then and in the amounts and on the conditions anticipated	Private	Private partner is responsible for arranging finance		NCRA requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions
Sponsor risk	Risk that financial demands on the private firm exceed its financial capacity causing bankruptcy	NCRA	If risk materializes, there is no private firm to transfer the risk to		Verify financial strength and track record of shareholders of private firm during bidding stage and reject those with a weak financial profile Require periodic financial reporting by private firm	Contract clause requiring a performance bond and letters of credit Contract clause giving NCRA step-in rights in case of bankruptcy of private firm Contract clause requiring minimum liquidity and debt ratios

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Tax changes	Risk that before or after completion the tax rate on the private firm, its assets or on the project, will change	NCRA	Private firm has no influence over change in tax law		Seek guarantee from national government changes in law	Contract clause providing compensation terms for changes in tax law Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available Performance undertaking from national government covering termination payment due to change in tax law
Operating risk						
Maintenance and Refurbishment	Risk that design and/or system quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes		Private firm to manage through long term subcontracts with suitably qualified and resourced sub-contractors	Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications Contract clause requiring performance bond
Operator failure	Risk that the system, communications, or any of the associated facilities fail to operate according to specifications	Private, except when: Failure is caused by NCRA action	Private firm is able to influence and control the operations of all assets and facilities		Private firm to require warranties from contractors and suppliers Private firm to develop operating manuals and recruit experienced managers and operators	Contract clause imposing penalties (and possible termination) for not meeting service specifications Contract clause requiring performance bond

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Market demand risk						
Demand risk	Risk that demand for civil registry certifications or authentications falls expected levels	Private	Service is a monopoly for which demand is well established, and significant improvements in service delivery are likely to result in increased demand growth		As part of the feasibility study, NCRA is to carryout demand studies to determine if forecasted demand is consistent with system capacity	Contract clause stipulating private partner is not to receive any compensation from NCRA beyond its share of the user fees.
Payment risk	Risk of a portion of users or customers not paying or evading payment for service, leading to a shortfall in cash flows	Private, except when: User has made payment to local government and local government will not convey payment	Service is to be provided to users only against payment, making unit avoidance impossible		NCRA to guarantee payments from local government units	Contract clause defining mechanics of unpaid or missing user fees.
Network and interface risk						
Withdrawal of support network	Risk that local government units unilaterally decide to stop processing requests from users in their localities (for example, demand higher share of fee, etc.)	NCRA	NCRA is in a better position to influence the actions of local governments		NCRA to establish firm agreements with municipal administrations to participate in the program	Contract clause defining compensation mechanism for private partner (for example, liquidated damages)
Industrial relations risk						
Industrial relations	Risk of a strike by private firm staff Risk of a strike by NCRA staff	Private, if private firm staff NCRA, if NCRA staff	Private partner has better information about and control over the causes of strike by its own staff		Private partner (or its sub-contractors) manage project delivery and operations	Contract clause defining circumstances and requiring payment of liquidated damages to NCRA

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
			NCRA has better information about, and control over, the causes of strike by its own staff			Contract clause defining circumstances and requiring payment of liquidated damages to private partner
Legislative and government policy risk						
Changes in law/policy	Risk of a change in law/policy of government (after the contract has been signed), mandating the opening of CRITP outlets in every town with a population of over 50,000	NCRA / national government	NCRA has more information about the likelihood and consequences of such a change		Seek a guarantee from the national government	Contract clause allowing compensation to private in a pre-specified manner or requiring NCRA to pay for such changes Performance undertaking from national government
Regulation	Risk that national government imposes limits on NCRA user fee increases	NCRA	Private firm has no control or influence over national government policy		NCRA to seek a guarantee prior to bidding on the terms of the contract	Contract clause specifying compensation to private firm in case of regulatory decisions that have an adverse effect on cashflow of private firm.
Force majeure risk						
Force majeure	Risk that a facility or equipment in the system suffers irreversible damage as a result of hurricane flood or another natural disaster, stopping service provision for days	Private	Private firm to buy insurance and take risk of loss or damage to the asset and loss of revenue (insurable risks)		Private to purchase insurance for insurable risks Private to incorporate redundancy and backup mechanisms in the system	Contract clauses to: ▪ Expressly define events that will constitute acts of God and political force majeure events ▪ Relieve private from consequences of service discontinuity;

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
						▪ Require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and NCRA is to be given the benefit of insurance for service disruption costs
Asset ownership risk						
Default and termination	Risk of private firm going bankrupt and stopping work in the system prior to completion, to a point that the contract is terminated	Private firm to take the risk of loss of value on termination	Private firm has more knowledge of the underlying causes of default and can identify risk earlier than government		Only serious breaches by the private partner to lead to termination Private partner to be given time and opportunity to remedy defaults by the private partner which may lead to termination NCRA to require step in rights to ensure access and service continuity until ownership/control issues are resolved	Contract clause clearly establishing specific contract breaches leading to termination Contract clause to define options for remediation of default

A.5 Solid Waste Management

Project Description

The Metropolitan Authority of Metro City (MAMC) is interested in structuring a BOT- PPP type arrangement to collect and dispose solid waste from defined area of Metro City. The Project will involve financing, designing, constructing, owning, operating and maintaining the equipment and facilities to:

- Provide door to door waste collection services
- Consolidate waste at transfer station
- Transport waste from transfer station to landfill
- Manual recovery of recyclable material
- Final disposal into landfill

The Projects would require a total investment of PhP 1 billion.

The Project will be developed and procured following the solicited proposal process prescribed under BOT Law and its Implementing Rules and Regulations (IRR).

Project Rationale

MAMC is the sole authority responsible for the management of solid waste generated in Metro City. However, due to lack of funding, MAMC is unable to meet waste collection schedules, is not collecting waste at all in some areas of the city, and its current disposal system is overloaded and unable to adequately handle the current load. Waste is littered by the residents in open plots and various sites around the city. It is estimated that approximately 60,000 – 80,000 tons of solid waste is littered in Metro City.

Street sweeping is being performed manually by sweepers and the waste is stored at the pick up points which may be called filth heaps. Tractor trolleys are used to lift the wastes from these filth heaps manually, which is then taken to the nearest disposal site. Due to indiscriminate littering of solid waste, many streets are not cleaned completely. The area is quite congested and waste collection sweepers use small, hand-held brooms for sweeping and wheel barrows for collecting the sweepings. There are no steps taken to treat the waste, resulting in organic materials, hazardous and dangerous items finding their way onto open areas. The current practice is extremely dangerous for the general population and ecology.

Other major cities in the Philippines have used BOT-PPPs to successfully address similar challenges and Metro City wants to follow the examples of those cities. MAMC wants to start trialing this approach in a defined area of 1,500Ha in Metro City. If successful the approach could be expanded to cover the rest of the city.

Metropolitan Authority of Metro City

MAMC is responsible for collection, transportation and disposal of solid waste in Metro City. MAMC is a department of the Government of Metro City. MAMC's budget is approved by the city government and it also receives revenues from collecting solid waste handling fees from end-users. MAMC's invoicing systems are outdated and of the few invoices issued, less than 30 percent are paid.

The Sanitary section within the Food and Sanitation Department of MAMC perform these tasks with a total of 200 employees including a Food and Sanitary Inspector, eight Sanitary Supervisors, eighty one Workers and fourteen Support Staff. Out of this total workforce, seventy two employees are directly involved in the task of collection, transportation and disposal of waste. MAMC is the Implementing Agency of the Project.

Regulatory Framework

MAMC is responsible for setting solid waste management standards and tariffs. There are no rules or guidelines on how MAMC would set these standards and tariffs.

Table A.5: Preliminary Risk Allocation Matrix – Solid Waste Management Project

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Pre-contract risk						
Site conditions	Risk that unanticipated adverse geological conditions are discovered at the site selected for landfill and/or at the transfer station sites, which cause construction costs to increase and/or cause construction delays	Private	Private partner can manage cost- effectively, since site study effort is likely to be moderate (landfill to be co-located in an area where MAMC is already operating a landfill) Construction of transfer stations is relatively simple		Private firm will pass to builder which relies on expert testing and due diligence Give private firm enough time to do site studies	Contract clause requiring private partner to provide performance bond
Permits and approvals	Risk that environmental license, environmental management plan, and construction permits may not be obtained or may be obtained only subject to unanticipated conditions which have adverse cost consequences or cause prolonged delay	MAMC	MAMC is best placed to influence the decision of other government officials that issue these permits and approvals		Environmental license for landfill, environmental management plan for landfill and service, and preliminary construction permit have already been obtained by MAMC prior to bidding.	Contract clause stipulating deadline by which construction permit, environmental license and environmental management plan, will be granted and defining remedies in favor of private firm in case of delay
Environmental liabilities created during operation	Risk that the use of the section of the landfill used by the private sector over the contract term results in significant environmental liabilities (remediation required to make the site	Private	Environmental license and environmental management plan have been approved prior to submission of proposals Private partner is able		During procurement private partner must demonstrate financial capacity or support to deliver the site in the state required by government at the end of the contract	Contract clause defining what constitutes environmental liability and the mechanism to estimate the private partner's liability and pursue payment (only for the section)

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
	fit for future anticipated use)		to manage the use of the asset and attend to its maintenance and re-furbishment according to the environmental requirements known at the proposal stage		MAMC to require sinking funds to cover the cost of closing the landfill when it reaches capacity.	of the landfill operated by the private partner) Contract clause requiring the establishment of a land-fill closing sinking fund
Availability of site	Risk that tenure/access to a selected transfer site, not presently owned by government, cannot be negotiated (landfill site is already city owned and oper-ated) Risk of costs and delays in negotiating land acquisition	MAMC	MAMC has a better understanding of procedures, has special powers of acquisition and use of land for infrastructure and is usually in best position to manage Government is in better position to negotiate where policy damages use of compulsory acquisition power		MAMC to complete land acquisition for transfer stations prior to proposal stage	Contract clause stipulat-ing transfer station site availability schedule and liquidated damages payable to private partner in case of delays
Design, construction and commissioning risk						
Design	Risk that the design of the service (landfill facility, the door-to-door waste collection routes, and the consolidation and transfer process) are substandard, unsafe, or incapable of delivering the services at antici-pated cost and specified level of service	Private	Private partner has more experience, knowledge and control over the variables that determine the qual-ity of the design (i.e. experience, competent staff, etc.)		Incorporate strict experi-ence and competency requirements in the pro-curement process Private partner maintains primary liability; and government has the right to abate service charge payments where the risk eventuates and results in a lack of service it may ultimately result in termination where the problem cannot be suit-ably remedied	Contract clause requiring performance bond Contract clause stipulating liquidated damages, service charge abatements, or termination for substan-dard performance.

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Construction	Risk that events occur during construction of landfill or transfer sites which prevent the facility being delivered on time and on cost	Private	Private partner has more experience, knowledge and control over the variables that influence construction cost and control over construction process.		Incorporate strict experience and competency requirements in the procurement process Ensure that a feasibility study is available well in advance of the procurement process	Contract clause requiring performance bond Contract clause stipulating liquidated damages
Commissioning	Risk that either the physical or the operational commissioning tests which are required to be completed for the provision of services (for example, disposal into landfill) to commence, cannot be successfully completed	Private	Private partner is in control of the design and construction process and its inputs, and therefore better positioned to manage this risk		Incorporate strict experience and competency requirements in the procurement process	Contract clause requiring a performance bond Contract clause stipulating liquidated damages until system is fully operational
Sponsor and financial risk						
Interest rates post-completion	Risk that after completion interest rates may move adversely	Private	Private partner in control of selecting and arranging long-term financing		Interest rate hedging instruments (for example, interest rate swap from IFC) Arrange financing using a mix of foreign and local currency	Contract clause holding government harmless
Exchange rate	Risk that during operation, exchange rates may move adversely, affecting the private partner's ability to service foreign denominated debt and obtain its expected profit	Shared MAMC to assume part of it by allowing total or partial indexing of payments to exchange rate Private to assume remainder	Private partner is in control of selecting and arranging local and foreign currency mix for long-term financing Government has more experience and information regarding the factors that influence exchange rates		Private to partially mitigate by financing part of the project in local currency Private to establish Foreign Exchange Liquidity Facility to cover part of the potential mismatch between project's	Contract clause requiring establishment of a Foreign Exchange Liquidity Facility Tariff or payment adjustment contract clause

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
					local currency revenues and foreign currency debt MAMC to transfer part of it to users by allowing total or partial indexing of payments to exchange rate	
Currency convertibility and profit repatriation	Risk that local currency cannot be converted into foreign currency as a result of government restrictions	MAMC	Government has more experience and information regarding the factors that influence currency convertibility		Purchase partial risk guarantee from an International Financing Institution	Contract clause stipulating that private partner can benefit from the guarantee to compensate for losses related to currency convertibility and repatriation of profits
Inflation	Risk that value of payments received during the term is eroded by inflation	Shared MAMC to assume part of it by allowing total or partial indexing of payments to inflation Private to assume remainder risk through the methodology adopted to maintain value	Government has more experience and information regarding the factors that influence inflation		MAMC to transfer part of it to users by allowing total or partial indexing of payments to inflation rate MAMC to ensure its payments do not overcompensate for inflation and to avoid any double payment for after costs adjustments (for example, changes in exchange rate)	Contract clause defining payment adjustment mechanisms
Financing unavailable	Risk that when debt and/or equity is required by the private firm for the project it is not available then and on the conditions anticipated	Private	Private partner is responsible for arranging finance		MAMC requires all bids to have fully documented financial commitments with minimal and easily achievable conditionality	Contract clause requiring firm letters of credit from reputable financial institutions

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Sponsor risk	Risk that the private partner is unable to provide the required services or becomes insolvent Risk that financial demands on the private partner exceed its financial capacity causing corporate failure	MAMC	If this risk materializes, there is no private partner to transfer the risk to		Ensure adequacy of finances under loan facilities or sponsor commitments supported by performance bond Ensure adequacy of finances through the use of non financial evaluation criteria and due diligence on private partner	Contract clause requiring a performance bond and letters of credit Contract clause requiring minimum liquidity and debt ratios Contract clause giving MAMC step-in rights in case of bankruptcy of private firm
Tax changes	Risk that before or after completion the tax rate on the private firm, its assets or on the project, will change	MAMC	Private firm has no influence over change in tax law		Seek guarantee from national government	Contract clause providing compensation terms for changes in tax law Contract clause providing a buy-out (put) option or termination with compensation for private partner when no other compensation mechanism is available Performance undertaking from national government covering termination payment due to change in tax law
Operating risk						
Maintenance and Refurbishment	Risk that design and/or construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs	Private	Private partner is in control of design and construction processes		Private firm to manage through long term subcontracts with suitably qualified and resourced sub-contractors	Contract clause imposing penalties (and possible termination) for not meeting specific and well defined performance, level of service, and quality specifications Contract clause requiring performance bond from private

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Operator failure	Risk that the waste collection service, the transport service or waste disposal process, may fail to meet specification	Private, except when: Failure is caused by MAMC action	Private firm is able to influence and control the operations of all assets and facilities		Private firm to require warranties from contractors and suppliers Private firm to develop operating manuals and recruit experienced managers and operators	Contract clause imposing penalties (and possible termination) for not meeting service specifications Contract clause requiring performance bond
Market demand risk						
Demand risk	Risk that demand for waste disposal falls below expected levels	MAMC	Although the volumes of waste produced in Metro City are certain and relatively easy to predict, residents are not used to paying for the service and revenue collection will likely continue being an issue. MAMC will pay private partner directly based on the volume of waste collected and processed		MAMC to carry out demand studies to determine if forecasted demand is consistent with the required capacity of the location/system	Contract clause stipulating fixed payments for making system available and variable payments for actual volume of waste disposed
Fee avoidance	Risk of a portion of users or customers not paying or evading payment for service	MAMC	MAMC is in better position to improve overall collection effectiveness for the service. Private partner will only be managing a pilot project in a limited section of Metro City		Initiate a campaign to reduce the amount of customers with arrears and a public awareness campaign to increase the number of paying customers	Contract clause stipulating a compensation mechanism (fixed and variable payment) clearly independent from fees collected from users

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Payment risk	Risk of MAMC not making payments to private firm on time or for the full amounts, including buyout and termination payment	Shared	MAMC has direct influence and control over this risk, but if it is incapable of paying, the residual risk will be borne by private party		Private will carry out detailed credit analysis of MAMC prior to bidding MAMC to introduce, if needed, credit enhancement instruments such as escrow or revenue accounts.	Contract clause defining mechanics of credit enhancement instruments.
Network and interface risk						
Interface (1)	Risk that the use of the landfill by Metro City's Sanitary section results in the landfill filling up sooner than expected (during the life of the BOT-PPP), and causing the private partner to use an alternate location (additional miles driven moving of equipment, etc.), adversely affecting its business.	MAMC	Government manages core service activities allowing it to influence the materialization of interface risk and its consequences		MAMC to analyze existing capacity of landfill to accept projected additional waste and to develop a plan for expanding the landfill in case it is needed, as well as financing the investments related to that expansion Upfront assessment (by both MAMC and the private partner) of likely interface issues Continuous review and monitoring	Contract clause to specify the extent of Metro City Sanitary section services and the way in which they will be delivered so that only manifest and adverse changes and deficiencies can trigger this risk Contract clause defining compensation mechanism for private partner
Industrial relations risk						
Industrial relations	Risk of a strike by private firm staff Risk of a strike by MAMC Sanitary department staff at landfill or transfer stations	Private, if private firm staff MAMC, if MAMC staff	Private partner has better information about and control over the causes of strike by its own staff MAMC has better information about, and control over, the causes of strike by its own staff		Private partner (or its sub-contractors) manage project delivery and operations	Contract clause defining circumstances and requiring payment of liquidated damages to MAMC Contract clause defining circumstances and requiring payment of liquidated damages to private partner

Risk (1)	Definition (2)	Allocation (3)	Rationale (4)	Severity of impact, likelihood of Occurrence and Priority (5)	Mitigation Strategies (6)	Allocation Instrument (7)
Legislative and government policy risk						
Changes in law/policy	Risk of a change in law/ policy of government (after the contract has been signed), requiring new, highly sophisticated and expensive methods to close landfill	MAMC / national government	Government has more information about the likelihood and consequences of such a change		Seek a guarantee from the national government	Contract clause allowing compensation to private in a pre-specified manner or requiring MAMC to pay for such changes Performance undertaking from national government
Regulation	Risk that National Environmental Protection Agency (NEPA) imposes more stringent landfill regulations that elevate the cost of waste disposal	MAMC	Private firm has no control or influence over the NEPA		MAMC to seek a legal opinion from the NEPA prior to bidding on the terms of the contract	Contract clause specifying compensation to private firm in case of regulatory decisions that have an adverse effect on cashflow of private firm.
Force majeure risk						
Force majeure	Risk that landfill integrity is compromised as a result of an earthquake or a flood, requiring extensive repairs and stopping service for days	Private to buy insurance and take risk of loss or damage to the asset and loss of revenue (insurable risks)	Private firm can buy insurance from the marketplace		Private to purchase insurance for insurable risks	Contract clauses to: Expressly define events that will constitute acts of God and political force majeure events Relieve private from consequences of service discontinuity; Require that if insurable, private must ensure availability of insurance proceeds towards asset repair and service resumption and MAMC is to be given the benefit of insurance for service disruption costs

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Asset ownership risk						
Default and-termination	Risk of private firm going bankrupt and stopping work in the facility prior to completion, to a point that the contract is terminated	Private firm to take the risk of loss of value on termination	Private firm has more knowledge of the underlying causes of default and can identify risk earlier than government		Only serious breaches by the private partner to lead to termination Private partner to be given time and opportunity to remedy defaults by the private partner MAMC to require step in rights to ensure access and service continuity until ownership/control issues are resolved	Contract clause clearly establishing specific contract breaches leading to termination Contract clause to define options for remediation of default which may lead to termination

Appendix A References

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