

D5. Risk Assessment & Allocation

Methodology and Guidance for Risk Assessment &
Allocation

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Disclaimer

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ABBREVIATIONS

CBA	Cost-Benefit Analysis
EPEC	European PPP Expertise Centre
PIMU	Public Investment Management Unit
PPP	Public-Private Partnership
PSC	Public Sector Comparator
VfM	Value for Money

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1. PURPOSE OF THIS DOCUMENT

Aim of this Guidance

This Guidance aims to provide public authorities and PPP practitioners throughout Romania with a concrete approach and methodology for conducting risk management for PPP projects. Although the Guidance may also be used for concession projects, the scope of this deliverable shall be limited to PPPs, given that (unlike in other legal systems) Romanian law makes a distinction between PPPs and concessions, as described below. The framework stipulated in this Guidance is informed by risk assessment and allocation approaches in PPP markets globally and has been tailored to the Romanian PPP context.

This Guidance complements *the Emergency Ordinance No. 39/2018 on Public-Private Partnerships* (**"the PPP law"**) and must be followed when analysing the risks of a PPP project in all stages of maturity (e.g. pre-Feasibility study, Feasibility & Substantiation study and subsequent tendering) and contains the following elements:

- A definition of risk within the context of PPP projects and its role in the development of such projects;
- A detailed process for the management of risk (which entails risk identification, assessment, allocation, and mitigation) in the context of the PPP and concession project preparation and procurement process in Romania, including guidance on the parties responsible for each step in the process; and
- A practical methodology and approach for undertaking the risk management process, and a demonstration of the level of detail of risk analysis that is appropriate for each stage of the PPP process.

This Guidance, however, does not:

- Provide exhaustive and prescriptive risk allocation matrices for specific projects or sectors. As will be explained throughout this Guidance, risk allocation ultimately depends on the specific circumstances and characteristics of a particular project. While there are existing recommended risk allocation approaches for PPP projects, these can only be used as a starting point for risk management; or
- Replace the detailed risk analysis work to be conducted by the Contracting Authority, together with its transaction advisers / external consultants and PIMU, that shall be required for any PPP project to be tendered.

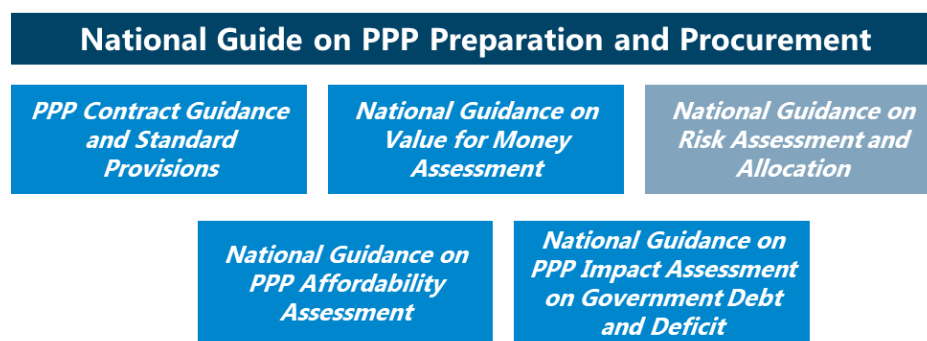
Reading guide

Chapter 2 describes the concepts, definitions and purpose of risk in the PPP and concession project preparation process. **Chapter 3** describes the risk analysis process and details the steps required throughout the PPP and concession preparation and procurement process with regard to risk.

Appendices 1 to 3 provide **methodologies and tools** that will guide the conduct of the different components of risk management process. They also provide **sample outputs** relevant to each step of the process laid out in Chapter 3. **Appendix 4** provides an overview of key risk differences and critical risks common in the three priority domains for PPP development in Romania: transportation, health and education.

This guide is part of the National Guidance on PPP Preparation and Procurement and should be read in close conjunction with the procedures and methodology provided by the set of documents that are part of this Guidance (see Figure 1).

Figure 1: All guidance documentation as part of the National Guide on PPP Preparation and Procurement



Definition

The term **Public Private Partnership (PPP)** in this document means: *"A long-term contract between a public authority and a private sector company for the delivery of a public infrastructure or service that is under the responsibility of a state agency which transfers substantial risk to the private party, includes the provision of private financing and includes a focus on the specifications of project outputs rather than project inputs, linked with a payment system based on performance."*¹

The Romanian legislation distinguishes between: (i) **PPPs** and: (ii) other long-term (i.e., over 5 years) contracts involving either the performance of works and the operation of the asset(s) resulting from such works, or the provision of services. Such other long-term contracts are classified as either **Public Procurements** or **Concessions**, depending on whether a substantial portion of the operational risk is transferred to the private partner. PPPs are defined in and governed by Emergency Ordinance No. 39/2018 on Public-Private Partnerships ("the PPP law"), Public Procurement contracts are governed by Law No. 98/2016 on public procurement (or by Law no. 99/2016 on sectoral procurement) and Concessions are governed by Law No. 100/2016 on works concessions and service concessions ("the Concessions law"). PPP contracts are awarded according to Law No. 98/2016 (or Law No. 99/2016) or according to Law No. 100/2016.

Whereas traditionally in other countries in Europe, no distinction is made between PPPs and Concessions (as Concessions are considered a form of PPP), the PPP Law specifically distinguishes between PPPs and other long-term contracts (such as Concessions). In order to determine if the PPP Law is applicable, the PPP law requires the Substantiation study to demonstrate that *"...more than half of the revenues to be obtained by the project company from the use of the good / goods or operation of the public service that is the object of the project come from payments made by the public partner or other public entities for the benefit of the partner public."*² The Substantiation study that determines whether a given project qualifies as a PPP or not should also determine whether the project involves the transfer of a substantial portion of the operational risk to the private partner.

If half or more of the revenue comes from payments made by users and all other conditions as set by the Concessions law are met (notably, the condition that a substantial portion of the operational risk is transferred to the private partner), the project will be defined as a Concession.

Given that the requirements for risk assessment and allocation are the same for both PPPs and Concessions, no further distinction will be made in this respect throughout this Guidance. Thus, whenever reference is made to PPPs as defined by the PPP law, the Guidance may also be relevant to Concessions as defined by the Concessions law.

¹ Definition based on the definition of a PPP by EPEC.

² PPP Law, Article 2

2. THE CONCEPT OF RISK AND RISK MANAGEMENT IN A PPP

What is risk?

2.1.1 Definition of PPP project risks

A risk in the context of a PPP project is the difference between a specific expected project outcome and the actual, realized project outcome. For example, *Demand risk*, one of the key risks in a PPP project, pertains to the difference between the forecasted usage of a particular project (typically determined during the Feasibility & Substantiation study phase) and the actual usage of that project (which is realized post-construction completion and during the operational phase of the project).

A PPP project can be viewed as a bundle of multiple risks such as this.³

From a holistic project perspective, risk can be viewed as the gap between the *total realized value of the project* versus its *forecasted value*, taking into account the value that accrues to each project stakeholder: the customers or users of the project, the government or the Contracting Authority, the private partner which sets up the project company, and other stakeholders. A stakeholder's risk in a project is the unpredictable variation in the value of their interest in the project.⁴ Typical risks in a PPP

The risks that are relevant to a particular PPP project may vary from one project to another and can depend on project-specific factors such as: the sector it is in, the market conditions within which it will operate, the physical location of the project (and the characteristics of such location), and the stakeholders involved in the project.

However, some risks are well-documented to be typical risks that are relevant to a PPP project. These risks may include the following:

Table 1: Examples of PPP Project Risks⁵

Risk	Descriptive Summary
Land/Site	Purchase (of land) and provision of free access to the site for construction
Permitting	Statutory licences and approvals
Design	Compliance with standards / project requirements
Construction	Fitness-for-purpose, liability for defects
Operations	Compliance with standards / output requirements, KPIs
Maintenance	Residual design life protected (or compliance with maintenance standards such that the asset is in usable condition throughout its design life)
Residual condition	Compliance with minimum standard at the end of the PPP contract
Environmental	Pollution, ground contamination, hazardous materials
Social	Third party interference
Demand	Quantity of demand and pricing
New technology	Disruptive to established practice, cost

Appendix 1 contains a more exhaustive list of project risks.

This guide will focus on providing guidance on when and how to undertake the risk management process (of risks such as the above) within the PPP project lifecycle. Given that risk management in the context of a PPP

³ EPEC Guide to Public-Private Partnerships, Chapter 3: Topics. EIB, 2021.

⁴ Source: Timothy C. Irwin, 2007. "Government Guarantees: Allocating and Valuing Risk in Privately Financed Infrastructure Projects," World Bank Publications, The World Bank, number 6638, December.

⁵ EPEC Guide to Public-Private Partnerships, Chapter 3: Topics. EIB, 2021.

project is a relatively well-documented topic, this guide will also refer to existing references and tools that can be used as aides in the risk management process.

2.1.2 Other definitions

To help ensure the uniform interpretation of this guide, the following terms which are used frequently in this guide are defined:

- **Risk management** in the context of this guide refers to the entire process of dealing with risks *arising from a PPP project*. This process covers: risk identification, risk assessment, risk allocation, risk mitigation, and risk monitoring. All of these steps are defined further in Section 2.2, while Section 3 details when and how each step should be undertaken within the context of the PPP process.
- **Risk register** refers to the consolidated output of the risk management process. A complete risk register contains: the list and the description of risks that are relevant to a specific PPP project, the assessment of each risk (i.e., a measure of how critical each risk is), the allocation of each risk, and risk mitigation strategies/plans of action.

Risk management in a PPP

2.1.3 Purpose of risk management

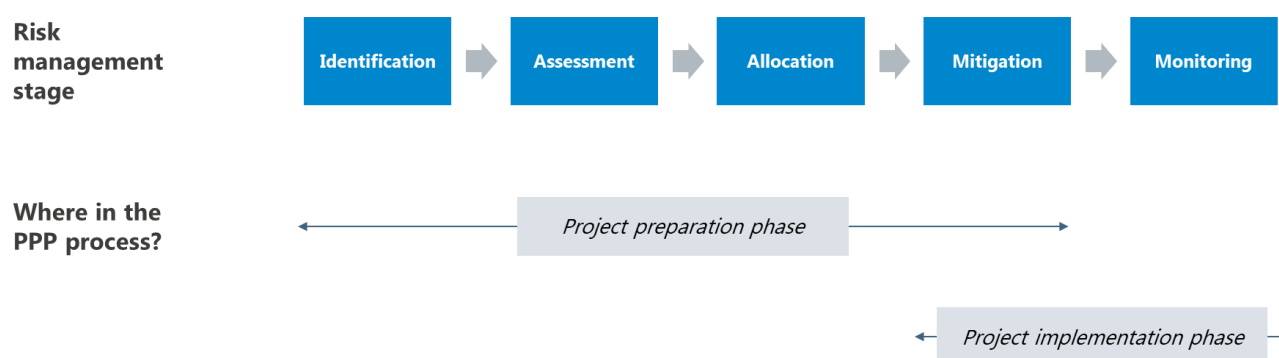
Risk management is fundamental to the development of any project. While risk management is not unique to projects procured via PPP, it is particularly relevant for such projects, given that a greater degree of risk transfer to a private partner is a core feature of and rationale for undertaking a PPP.

In any PPP project, the risk management process serves the following purposes:

- Provides guidance to the Contracting Authority for coming up with the optimal project structure, as the risk management process entails the assessment of how risks can be appropriately balanced between the private partner and the Contracting Authority;
- Forms the basis of the PPP contract and the final terms and conditions under which the project will be undertaken, which then drives how both parties to the PPP contract will price their involvement in the project (i.e., opportunity cost of equity of the private partner or project sponsor, availability and terms of lending from the lenders, and/or any subsidy, guarantee or contribution from the Contracting Authority). A balanced project structure leads to optimal pricing by both partners and minimizes the risk of the PPP contract being renegotiated at a later stage of the project;
- Informs policymakers of material risks that may be expected in the process of undertaking the project, thereby allowing the public sector to prepare accordingly for the procurement and implementation of a PPP project;
- Informs the structuring and evaluation of future PPP projects; and importantly,
- Drives both the assessment and the realization of Value for Money (VfM) of a PPP. The risk management process, particularly the risk allocation, influences the choice of whether or not to procure the project as a PPP (i.e., the VfM assessment). Once that choice is made, the risk management process also determines whether the expected VfM will actually be realized throughout the course of the project.

2.1.4 Stages of risk management

Figure 2: Stages of risk management in the PPP process



The risk management process generally consists of the following stages which need to take place within the PPP project life cycle⁶:

- **Risk identification** involves listing all the risks which may be relevant for the specific project and its stakeholders throughout the entire project life, as well as describing each risk and how it is relevant for the project. The risks could occur during the pre-construction phase, during construction, and/or during operations through to the end of the PPP project period.
- **Risk assessment** involves identifying, from the risk register, which risks are most material to the project. It involves prioritizing risks that need to be addressed, based on their likelihood of occurrence and impact of occurrence. To the extent that a quantitative VfM analysis is required for the project, the quantification of risk adjustments to be incorporated in the quantitative VfM analysis is also done during this phase;

For more guidance on the quantitative VfM analysis, refer to the *National Guidance on Value for Money Assessment*

- **Risk allocation** involves assigning the risks to the party best able to manage the risk. Risks can be assigned to the Contracting Authority, to the private partner, or to be shared between the two.
- **Risk mitigation** is an action which seeks to reduce the probability of a risk occurring in the first place, or reduce the consequences of a risk should it occur. This phase involves identifying possible risk mitigation measures, which are actions that may come from the Contracting Authority, measures that may be incorporated in the PPP contract, or third-party risk mitigation instruments that may be secured by the party assigned to manage the risk.
- **Risk monitoring** involves the continuous review and updating of the risk register, initially prepared during the project preparation and procurement phase, throughout the PPP lifecycle.

It is important to note that while there is a sequence to the stages of risk management (in that the prior step needs to happen before the next can be undertaken), the process should be viewed as an **iterative** one. Risk identification, assessment, allocation and mitigation all occur iteratively within the project preparation and procurement phase, while risk mitigation and monitoring likewise occur iteratively during the project implementation phase. Section 3 provides more detail on the process of risk management within the context of the stages of the PPP process in Romania, and how each risk management step needs to be undertaken.

⁶ EPEC Guide to Public-Private Partnerships, Chapter 3: Topics. EIB, 2021.

In addition, it is also important to note that this guide focuses on **project** risks which may occur as a result of a project being implemented as a **PPP** (i.e., PPP project risks), and which thereby need to be allocated between the Contracting Authority and the private partner for the optimal implementation of a PPP project.

Beyond such PPP project risks, however, a government entity that is looking to develop any project (whether through PPP or otherwise) faces a broader set of institutional risks that are outside the coverage of this guide. These include risks such as government capacity, staffing and management risk, reputational risk, legal and regulatory readiness, and overall business environment risk. Such risks may occur at any point during the project preparation and implementation phases, and must be considered and managed by the Contracting Authority independently of, but in parallel with the PPP project risks covered in this guide.

2.1.5 Who conducts the risk management process?

The ultimate owner of the risk management process in a PPP is the **Contracting Authority**, which retains primary responsibility for all the stages of the risk management process described above. Within the Contracting Authority, a team dedicated to managing the specific PPP project is likely to be in place. This team is ultimately responsible for ensuring that the project goes through the risk management process and keeping the risk register updated throughout this process.

To aid in the PPP development process, it is good practice for the Contracting Authority to hire a specialist **team of consultants or advisors** who would then assist in the study, preparation, and procurement of a PPP. Such advisors typically conduct the risk identification, assessment, allocation, and mitigation steps of the risk mitigation process, under close consultation with the Contracting Authority and the central PPP agency, or **PIMU**. As PIMU will have broad exposure and involvement in all PPP transactions in Romania, it will over time develop a repository of knowledge on good practices applied across projects and sectors, including for risk management. Over time, PIMU will then be able to share this knowledge to various contracting authorities that plan to develop PPPs, and can provide guidance to such authorities throughout the risk management process.

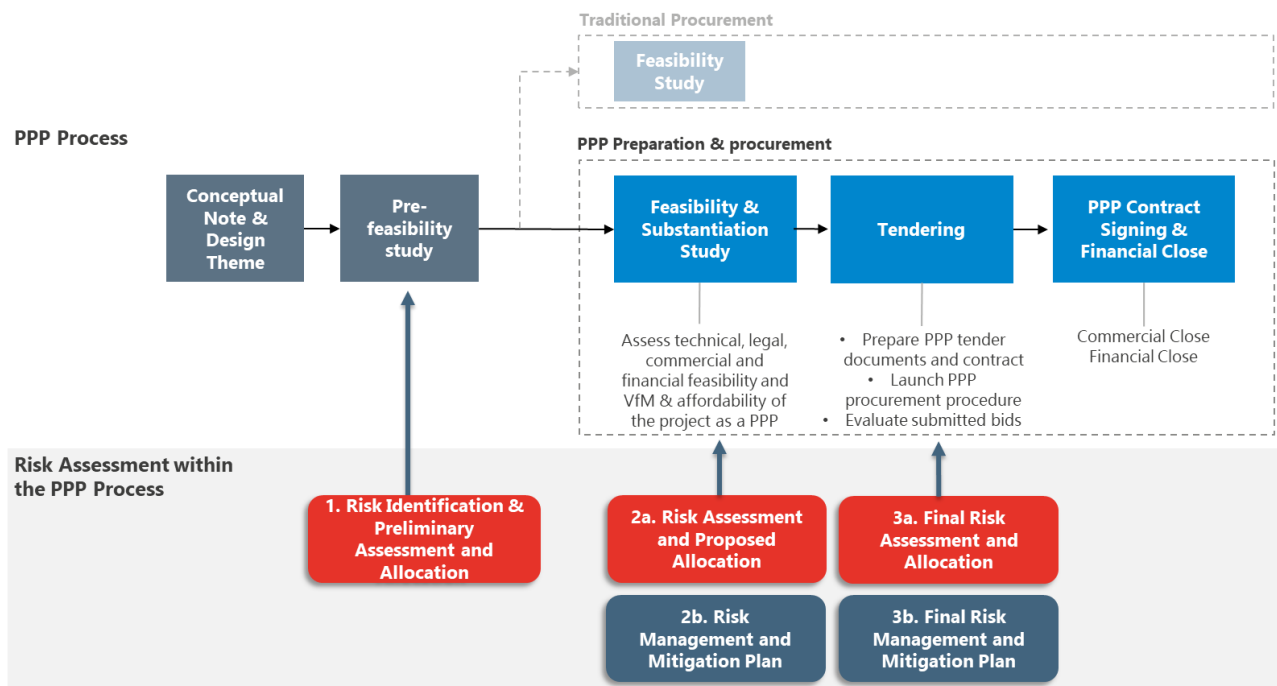
For more guidance on the PPP institutional framework and the role of each party in a PPP, refer to the *National Guidance on PPP Project Preparation and Procurement*.

3. THE RISK MANAGEMENT PROCESS

Process chart

Risk management forms part of the PPP project preparation and procurement process, as well as the subsequent implementation of the project after the PPP contract is signed. This guidance, however, focuses on the part of the risk management process that is undertaken during the project preparation and procurement phase (i.e., before the PPP contract is signed). The level of risk management at each step corresponds to where the project is in the PPP process. As a project is studied in more detail and more information about the project is generated, its risk management outputs (described in the following sections) also become more detailed and fleshed out. Related activities and assessments carried out during the PPP preparation and procurement process—such as the technical feasibility assessment, the affordability assessment, structuring of the project and the procurement process, and feedback from project stakeholders—all inform the risk management process.

Figure 3: PPP Risk Assessment and Allocation process overview



In general, risk management starts from (**Step 1**) identifying the project risks and forming a very high-level assessment and allocation of these risks during the *pre-feasibility study* stage. As a project moves from pre-Feasibility stage to the *Feasibility & Substantiation study* and *tendering* stages, the risk assessment and allocation (**Step 2a**), as well as the corresponding risk mitigation plan (**Step 2b**), are progressively developed. The risk assessment and allocation, as well as the risk mitigation plan) are finalized prior to the launch of the tendering process (**Steps 3a and 3b**). The final risk assessment and allocation matrix is crystallized in the final draft of the PPP contract, which becomes the basis for the bids that are submitted. Finally, when a project reaches its implementation phase, the risk management process continues through risk monitoring. This process lasts throughout the duration of the PPP contract, and the two parties to the contract (i.e., the Contracting Authority and the private partner) retain the responsibility to continuously monitor the risks that may occur at any given point. It is important to note that at any given point throughout the duration of the PPP contract, new risks may be identified, or some risks may be eliminated. As such, the risk management process is continuous and is done actively throughout the project lifecycle.

Guiding principles for risk management

The development of the risk assessment and allocation should follow the following principles:

- The timing and level of detail of risk management must be **proportionate** to the process: as with the VfM assessment (and other components that go into the Feasibility & Substantiation study), the level of detail of the assessment should fit the stage of development of the project, the size and complexity of the project and the quality of information available. As the project progresses through the PPP preparation and tendering process, the corresponding risk-related analyses likewise become progressively detailed;
- Risk assessment and allocation must be **appropriate**: the Contracting Authority, with the assistance of PIMU, should objectively assess the risk vis-à-vis their and the private sector's capability to manage each risk, taking into account the magnitude of each risk. A PPP is not a means by which the public sector should pass on all risk to the private sector; rather, an effective PPP properly takes into consideration the ability of each party to manage each project risk in the most economically efficient way, and fairly allocates the risks on the basis of such ability.
- In their final form, risk assessment and allocation must be **comprehensive and clear**: to the extent possible, the final risk assessment and allocation must capture a comprehensive / exhaustive list of the risks that may arise from the project. This is crucial as the final risk assessment and allocation will inform the PPP contract, which to the extent possible also needs to exhaustively capture possible scenarios that may occur during the long-term concession period. In addition, the final risk assessment and allocation must also be clear. If there are risks which must be shared between the public and private parties, the bounds of such sharing, and the mechanism through which the risks will be shared, must be clearly documented; and
- Risk assessment, allocation, and mitigation must **provide guidance** for future PPP implementation: the risk assessment and allocation process should properly guide and prepare the public sector, specifically the Contracting Authority, for implementing the project once it has been procured as a PPP. Quality risk assessment and allocation pave the way for high-quality risk mitigation plans, which should in turn help the Contracting Authority fulfil its project obligations and ultimately implement the PPP contract.

In the following sections, the specific risk assessment activities identified in each phase of the PPP preparation and procurement process will be further detailed.

Step-by-step approach to the risk management process

3.1.1 Step 1 – Risk Identification & Preliminary Assessment and Allocation

During the pre-Feasibility study stage, a preliminary risk identification, assessment, and allocation will be conducted by the Contracting Authority. This exercise will help inform the PPP Potential Scan (refer to the National Guidance on Value for Money Assessment) and will allow the Contracting Authority to (1) identify the relevant project risks over the long-term project period (*risk identification i.e., establish a list of risks relevant to the project*), (2) assess the magnitude of each of these risks (*risk assessment*), and (3) identify which risks could potentially be allocated to the private sector and which risks should remain the responsibility of the Contracting Authority (*risk allocation*). Through this exercise, the Contracting Authority can get a sense of whether the project can deliver VfM (see Part E of the Qualitative VfM Assessment checklists - Appendix 1 of the National Guidance on Value for Money Assessment (PPP Potential Scan)). Ultimately, the VfM of a PPP originates from the transfer of some project risks to the private sector, assuming they are able to manage these risks more efficiently than the Contracting Authority.

If the pre-Feasibility study points to PPP as a potentially suitable procurement strategy for the project and the project goes to the next phase of PPP preparation, the preliminary risk assessment and allocation will then be developed further using new information arising from the Feasibility & Substantiation study. The final outcome of this process (which is built upon step-by-step as the project goes through different stages of development

and procurement) is called the **risk register**, which is the core tool in the risk management process. The risk register will contain the list of risks, descriptions of each risk, the assessment and prioritization of risks, the risk allocation, and the risk mitigation strategies.

What	Step 1 – Risk Identification & Preliminary Assessment and Allocation
When	As part of the pre-Feasibility study
Objective	Conduct a high level assessment of project risks and identify hypothetical allocation of such risks for the project
How	<ol style="list-style-type: none"> 1. Formulate an initial list of the most relevant project risks (based on existing and widely used PPP risk assessment tools, See Appendix 1 for reference) 2. Form an initial view of the magnitude of each risk in the context of the project (i.e., how relevant is each risk for the project?) and identify which are most likely to be the critical risks for the project (See Appendix 1 for reference) 3. Allocate the key risks between the Contracting Authority/public sector and private sector (based on the information available at hand during pre-Feasibility study stage). At this stage, there may be multiple open options for allocating each risk. (See Appendix 1 for reference)
Who is responsible	<p>Contracting Authority, with guidance from PIMU (based on existing risk allocation international best practices. See Appendix 1 for guidance).</p> <p>Note that at this stage, the decision to proceed with a project through PPP has not yet been made and as such, advisors are not likely to be hired yet. Advisors are likely to be onboard from Step 2 onwards.</p>
Outcome	<p>Together with the PPP Potential Scan, this preliminary risk assessment and allocation will help inform the decision to support further assessment and development of the project as a potential PPP.</p> <p>If the project proceeds to the next phase, the hypothetical risk assessment and risk allocation (options) will be revisited and reassessed in further detail during the Feasibility & Substantiation study phase.</p>
Output	Preliminary Risk Identification, Assessment and Allocation Matrix (See Appendix 1 for guidance on how to conduct Step 1 and a sample output)

3.1.2 Step 2 – Risk Assessment and Proposed Allocation

The second step in the risk management process occurs within the context of the Feasibility & Substantiation study itself. The other components of the Feasibility & Substantiation study (and the activities undertaken in the process of this study) shall inform the risk assessment and proposed allocation. In turn, the risk assessment and allocation will also form one component of the Feasibility & Substantiation study.

This guidance describes all requirements for the risk assessment and allocation of a project during the Feasibility & Substantiation study.

For all other requirements of the Feasibility & Substantiation study (not directly related to risk assessment and allocation), refer to the *National Guidance on PPP Project Preparation and Procurement*.

The starting point for the risk assessment and allocation in Step 2 is the output from Step 1 – Preliminary Risk Identification, Assessment and Allocation Matrix. The hypothetical risk assessment and allocation matrix from Step 1 will need to be revisited and updated, given the new information from the following other components of the Feasibility & Substantiation study:

- Technical feasibility assessment;
- Market/demand assessment;
- Environmental, social, gender assessments;
- Affordability assessment; and
- Market sounding.

In addition to the components of the Feasibility & Substantiation study, the outcome in this step will also be influenced by the broader institutional risk management process of the Contracting Authority (as described in Section 2.1.5). With the above elements in place, a more comprehensive assessment of risk can be conducted, which will then provide a basis for a more informed proposed allocation of risks between the Contracting Authority and the private partner. This proposed risk allocation is what the Contracting Authority will “go to market” with (i.e., the proposed risk allocation goes into the draft PPP contract, which the Contracting Authority makes available to prospective bidders during the tendering stage of the PPP process).

What	Step 2a – Risk Assessment and Proposed Allocation
When	As part of the Feasibility & Substantiation study
Objective	Conduct a comprehensive risk assessment of the project and formulate the proposed (i.e. go-to-market) risk allocation for the project
How	<ol style="list-style-type: none"> 1. Review the output from Step 1. Are there any new project risks that were not initially considered, but are now apparently relevant to the project (based on the Feasibility & Substantiation study components listed above)? Add the newly identified risks. 2. Reassess the initial assessment of risks from Step 1. Are there any risks which are apparently more (or less) critical? Update the risk matrix to include new information / findings about the project arising from the Feasibility & Substantiation study that will more clearly define each risk in the context of the project. A more detailed risk ranking system can help identify the most critical project risks (see Appendix 2). 3. Revisit the preliminary risk allocation from Step 1. Given new information from the components of the Feasibility & Substantiation study, as well as initial feedback from the market (i.e. from an initial market sounding process which is typically done as part of the Feasibility & Substantiation study stage, based on international best practices), how should each risk now be allocated, considering what is fair and realistic? At this stage, the risk allocation should now be more definitive and clear. If certain risks are to be shared between the Contracting Authority and the private party, this version of the risk assessment and allocation should clearly define how the risk will be shared.

Who is responsible	Contracting Authority, with guidance from PIMU
Outcome	A clear allocation of risks which informs the project structure, the draft PPP contract, and the quantitative VfM analysis which is taking place in parallel with this step
Output	Risk Assessment and Proposed Allocation Matrix (Appendix 2), to be part of the Feasibility & Substantiation study

3.1.3 Step 2b – Risk Mitigation Strategy

In conjunction with developing Step 2a – Risk Assessment and Proposed Risk Allocation, an initial risk mitigation strategy also needs to be developed by the Contracting Authority. Once the proposed risk allocation is formed in Step 2a, the Contracting Authority should have a clear idea of the potential project risks that it will be responsible for managing throughout the duration of the PPP project.

The risk mitigation strategy is an exercise that allows the Contracting Authority to plan ahead for how it will deal with these risks. Requiring this to be part of the Feasibility & Substantiation study creates an incentive for the Contracting Authority to, at this early stage of the PPP process, already assess its internal capabilities for managing project risks and in the situation where it is unable to do so, think of ways to manage those risks through other means (for example, redefining the project scope or structure).).

In addition, developing a risk mitigation strategy can help open up ideas on how the procurement / tendering process itself can be carried out such that risks are already minimized even before a private partner is selected (e.g., setting the bidder qualification criteria at a certain level can help the Contracting Authority manage its own risks).

What	Step 2b – Risk Mitigation Strategy
When	As part of the Feasibility & Substantiation study
Objective	Formulate a risk mitigation strategy to help Contracting Authority manage the project risks assigned to it
How	<ol style="list-style-type: none"> 1. Take the list of risks and proposed risk allocation from Step 2a. 2. For each risk assigned to Contracting Authority, draft measures on how the authority will manage and mitigate each risk (see Appendix 3)
Who	Contracting Authority, with guidance from PIMU
Outcome	Improved preparedness of Contracting Authority for the tendering and implementation phase of the PPP project
Output	Risk Mitigation Strategy Matrix (see Appendix 3), to be part of the Feasibility & Substantiation study

3.1.4 Step 3a – Final Risk Assessment and Allocation

Once the Feasibility & Substantiation study is completed and the decision to proceed to tendering stage is made, the output in Step 2a (i.e., proposed risk allocation) is crystallized into the draft PPP contract. During the

tendering stage, the draft PPP contract is made available to prospective bidders as part of the bid documents. The prospective bidders are then able to review the documents and formulate a view, based on their own study and assessment, on the attractiveness or viability of the project. The decision by prospective bidders on whether or not to bid is largely influenced by the risk allocation of the project.

During the tendering stage, it is good practice for the Contracting Authority to engage (on a level playing field) with prospective bidders and allow the latter to comment and provide feedback on the project, particularly the proposed risk allocation (i.e., the output of Step 2a). It is during this process that the Contracting Authority is able to verify whether its proposed risk allocation is deemed feasible (or better yet, optimal) by its potential partner. The Contracting Authority can then take the feedback from prospective bidders and on this basis, reassess / reallocate the project risks, if needed (e.g., there is strong resistance from the market on accepting certain risks allocated to the private partner) and if it is possible (i.e., the Contracting Authority can realistically manage the risks). The decision to change the risk allocation will be based on the Contracting Authority's own assessment of the project and its views on its ability to manage project risks. Updating the Risk Assessment and Allocation Matrix also allows the Contracting Authority to keep track of any changes to the risks, including those it is responsible for managing.

This process of verifying the proposed risk allocation (and potentially changing such proposed risk allocation) during the tendering process by way of engaging directly with the market, comprises Step 3a. The expected outcome from this process is a final risk assessment and allocation, which will be used to finalize the PPP contract.

The final PPP contract shall be the basis for which the bids will be submitted and evaluated.

What	Step 3a – Final Risk Assessment and Allocation
When	During the tendering process
Objective	Verify Contracting Authority's risk assessment (from Step 2a) and feasibility of proposed risk allocation (Step 2a) with the market and finalize the risk allocation
How	<ol style="list-style-type: none"> 1. Draft PPP contract forms part of the bid documents to be made available to bidders during tendering process 2. Bidders to be given the opportunity to comment on the draft PPP contract <div style="background-color: #2c4e64; color: white; padding: 10px; text-align: center;"> For more guidance on the bidder engagement process during tendering stage, refer to the <i>National Guidance on PPP Project Preparation and Procurement</i>. </div> <ol style="list-style-type: none"> 3. Step 2a risk assessment and proposed risk allocation are updated as needed based on comments from bidders on draft PPP contract 4. Draft PPP contract is finalized based on final risk allocation
Who	Contracting Authority
Outcome	Final PPP contract is ready and bidders can submit their bids on the basis of such contract
Output	Final Risk Assessment and Allocation Matrix/Table (may be appended to the Feasibility & Substantiation study if any changes were made from Step 2a)

3.1.5 Step 3b – Risk Mitigation Matrix

As in Step 2b, Step 3b is an activity which the Contracting Authority needs to conduct in conjunction with Step 3a. After the risk assessment and allocation matrix are finalized in Step 3a, the Contracting Authority will likewise review and update the risk mitigation strategy (Step 2b) to reflect the final risk allocation, as needed. At this stage of the process, the Contracting Authority will have collected more information about project risks, not only from its own review of the project (i.e., from the Feasibility & Substantiation study), but also from the feedback it would have received from bidders during the tendering process. As in Step 3a, market feedback will help validate the Contracting Authority's assessment of the project risks and provide insight as to how these risks can be managed.

The risk mitigation matrix is meant to be an internal guide for the Contracting Authority and shall help the Contracting Authority prepare internally and among other government stakeholders for the (nearing) implementation of the project.

It is important to note that while Step 3b constitutes the last step of the risk management process within the project preparation and procurement phase, the risk management process continues through the operational period of the project. The risk register in its entirety continues to be a dynamic document that is continually monitored and updated as necessary during the implementation of the PPP project.

What	Step 3b – Risk Mitigation Strategy
When	During the tendering process
Objective	Update the risk mitigation strategy to help Contracting Authority manage the project risks assigned to it
How	Update the risk mitigation strategy (from Step 2b) given the final risk assessment and allocation matrix (from Step 3a)
Who	Contracting Authority
Outcome	Improved preparedness of Contracting Authority for the implementation phase of the PPP project
Output	Risk Mitigation Matrix/Table (may be appended to the Feasibility & Substantiation study if any changes were made from Step 2b)

APPENDIX 1: STEP 1 - RISK IDENTIFICATION, PRELIMINARY RISK ASSESSMENT & ALLOCATION

1. Organization of List of Risks

In creating the initial list of project risks, it is useful to think of the PPP project in terms of the phases that it goes through during the project life. Risks can be categorized according to the phase in which they are expected to occur:

1. **Pre-construction period** – post-signing of PPP contract and prior to construction start date
2. **Construction period** – construction start date to construction completion or commissioning
3. **Operations & maintenance period** – construction completion/commissioning to expiration of PPP contract or hand-back of asset

Setting up the list of risks this way maximizes the chances of conducting a comprehensive risk identification process and allows the Contracting Authority, from a very early stage, to start organizing its thinking around how it can prepare to manage the risks identified at each phase of the project.

2. Identifying Project Risks

The typical risks arising from PPP projects are well-documented and an abundance of resources could be used as a starting point to conduct Step 1 (3.1.1) and Step 2a (3.1.2) of the risk management process. The [PPP Risk Allocation Tool by the Global Infrastructure Hub \(GIH\)](#)⁷ provides detailed recommended risk registers for PPP projects in various sectors.⁸

The following table provides the typical list of risks from the GIH PPP Risk Allocation Tool that can be used as a starting point for any PPP project, arranged according to the project phase in which they can be expected to occur. It is important to note that this list is not exhaustive, and that the full list of risks for a specific project will ultimately depend on the characteristics of that project and the sector it is in.

For Step 1 of the risk management process, however, where little information about the project is expected to be known, the risks listed below are a suitable starting point.

Table 2: 2019 PPP Risk Allocation Tool (Summary Matrix for Road PPPs) - Global Infrastructure Hub

Phase	Pre-construction period
1. Land availability, access, and site risk	The risk associated with selecting land suitable for the project; providing it with good title and free of encumbrances; addressing indigenous rights; obtaining necessary planning approvals; providing access to the site; site security; and site and existing asset condition.
2. Social risk	The risk associated with the project impact on adjacent properties and affected people (including public protest and unrest); resettlement; indigenous land rights; and industrial

⁷ With contributions from the World Bank, the European PPP Expertise Center (EPEC) and the Asian Development Bank.

⁸ For this guidance, we use the GIH 2019 PPP Risk Allocation Tool as our main reference. There are, however, multiple sources of documented good practices for risk allocation, including: the APMG International PPP Certification Program guides, the EPEC PPP Guide, and the World Bank PPP Legal Resource Center. In addition to these publications, a key resource for risk identification would be the Contracting Authority as well as the private market players (including equity sponsors/developers and lenders). In the next steps of the risk management process (i.e., Step 2a and Step 2b), transaction advisors will play a key role in identifying these risks, for example through the conduct of a risk workshop / market sounding exercise with market players.

	action.
3. Environmental risk	The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.
4. Financing risk ⁹	The risk that the financing requirement for the construction of the project is not successfully raised (i.e., failure of the project to reach financial close).
Phase	Construction period
5. Design risk	The risk that the project design is not suitable for the purpose required; approval of design; and changes.
6. Construction risk	The risk of construction costs exceeding modelled costs; completion delays; project management; interface; quality standards compliance; health and safety; defects; intellectual property rights compliance; industrial action; and vandalism.
7. Variations risk	The risk of changes requested by either party to the service which affect construction or operation.
Phase	Operations & Maintenance period
8. Operating risk	The risk of events affecting performance or increasing costs beyond modelled costs; performance standards and price; availability of resources; intellectual property rights compliance; health and safety; compliance with maintenance standards; industrial action; and vandalism.
9. Demand risk	The risk of traffic levels being different than forecasted levels; the consequences for revenue and costs; and government support measures.
10. Financial markets risk	The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.
11. Strategic/partnering risk	The risk of the Private Partner and/or its sub-contractors not being the right choice to deliver the project; Contracting Authority intervention in the project; ownership changes; and disputes.
12. Disruptive technology risk	The risk that a new emerging technology unexpectedly displaces an established technology or the risk of obsolescence of equipment or materials used.
13. Force majeure risk	The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.
14. MAGA risk	The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.
15. Change in law risk	The risk of compliance with applicable law; and changes in law affecting performance of the project or the Private Partner's costs.
16. Early termination risk	The risk of a project being terminated before its natural expiry on various grounds; the financial consequences of such termination; and the strength of the Contracting Authority's payment covenant.
17. Condition at handback risk	The risk of deterioration of the project assets/land during the life of the PPP and the risk that the project assets/land are not in the contractually required condition at the time of handback to the Contracting Authority.

⁹ Not included in the GIH 2019 PPP Risk Allocation Tool, but is one of the key risks in PPP projects.

3. Preliminary Risk Assessment (Guidance)

At a very high level, and with little information known about the project at Step 1, a preliminary risk assessment can be conducted by using a simple rating scale of Low, Medium and High. For each project risk, the following preliminary risk assessment guide can be used:

Table 3: Guide for Preliminary Risk Assessment (Step 1)

Risk	Description	Preliminary Risk Assessment)		
		Low	Medium	High
Phase: Pre-construction period				
1. Land availability, access, and site risk	The risk associated with selecting land suitable for the project; providing it with good title and free of encumbrances; addressing indigenous rights; obtaining necessary planning approvals; providing access to the site; site security; and site and existing asset condition.	The project site has been identified, is available and is free of any known encumbrances	The project site has been identified and is partially available, but some land acquisition and site clearance work are required for the site to be ready for use	The project site either has yet to be identified, or has been identified but is currently in active use for other purposes or is yet to be acquired
2. Social risk	The risk associated with the project impact on adjacent properties and affected people (including public protest and unrest); resettlement; indigenous land rights; and industrial action.	No known communities or groups in adjacent properties will be directly affected by the project; the project is likely to be widely accepted by the public / its intended users	Some communities or groups in adjacent properties may be affected by the project; the project may be at risk of resistance from certain communities / groups	Communities or groups in adjacent properties are certain to be directly affected by the project; the project is controversial and is certain to face some resistance by identified communities/groups
3. Environmental risk	The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.	There are no known environmental risks posed by the project, or environmental risks relating to the project site; environmental consents or permits can be reasonably expected to be obtained	The project poses some environmental risks that may need special attention, for which there is a likelihood that environmental consents or permits may be obtained with some difficulty	The project poses great environmental risks that need intensive mitigation measures in order for consents or permits to be obtained

4. Financing risk	The risk that the financing requirement for the construction of the project is not successfully raised (i.e., failure of the project to reach financial close).	Capital markets are deep / there are many potential lenders and equity investors for a PPP project; there is high interest within the relevant financing markets for PPP projects	Moderately developed capital markets for PPPs; moderate interest within the relevant financing markets for PPP projects	Underdeveloped capital markets; little to no interest within the relevant financing markets for PPP projects
Phase: Construction period				
5. Design risk	The risk that the project design is not suitable for the purpose required; approval of design; and changes.	The project is expected to have simple architectural and engineering design requirements; there is abundant expertise in the private market to carry out a suitable design for the project	The project may have moderately complex design requirements; there are select firms in the private market to carry out a suitable design for the project	The project is expected to have complex design requirements and there is no certainty that a suitable design can be carried out by players in the private market
6. Construction risk	The risk of construction costs exceeding modelled costs; completion delays; project management; interface; quality standards compliance; health and safety; defects; intellectual property rights compliance; industrial action; and vandalism.	There is abundant expertise in the private market to carry out the construction of the project on time, within budget, and within local quality and safety standards; the project site is in a secure location where risk of vandalism / external disruptions to construction is low	There is some expertise in the private market to carry out the construction of the project on time, within budget, and within local quality and safety standards; the project site can be expected to be secured from any risk of vandalism during construction	There is little expertise in the private market to carry out the construction of the project on time, within budget, and within local quality and safety standards; the project site is in an insecure location exposed to risks of vandalism / external disruptions to construction
7. Variations risk	The risk of changes requested by either party to the service which affect construction or operation.	The output requirements for the project are clear and are not expected to change during the course of the PPP contract	There may be some uncertainty on the output requirements for the project and some difficulty in firming up these requirements prior to contract signing, such that variations in the PPP contract may be requested during the project life	The output requirements for the project are unclear and are unlikely to be firmed up even after the Feasibility & Substantiation study
Phase: Operations & Maintenance period				
8. Operating risk	The risk of events affecting performance or increasing costs beyond modelled costs; performance standards and price; availability of resources; intellectual	The project is expected to be operationally manageable and there is abundant expertise / experience in the private market to operate the project	The project is expected to be moderately complex to operate and there is some expertise / experience in the private market to operate the	The project is expected to have complex operational issues and there is little expertise / experience in the private market to operate the project

	property rights compliance; health and safety; compliance with maintenance standards; industrial action; and vandalism.		project	
9. Demand risk	The risk of traffic levels being different than forecasted levels; the consequences for revenue and costs; and government support measures.	Steady demand volume for the project can reasonably be expected (likely to be true especially for "brownfield" projects where demand is already demonstrated or projects which are monopolistic in nature—i.e., no alternative to the project); the price levied on the use of the project can be reasonably expected to be paid either by its users or there is sufficient funding from government to pay for the project	Demand volume is uncertain and has yet to be demonstrated for the project, but by the nature of the project, it can be expected to be used extensively by its intended users; users of the project can be reasonably expected to be willing to pay for the use of the project or government is willing to fund the project to the extent it may be needed	Demand volume is expected to be low for the project; users may not be willing to pay for their use of the project, and government is uncertain as to whether it can financially support the project sufficiently
10. Financial markets risk	The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.	Financial markets are stable; capital markets are deep enough to secure sufficient and reasonably priced financing and insurance products	Moderately stable financial markets; moderately developed capital markets with some access to financing and insurance products	Unstable financial markets; underdeveloped capital markets with little to no access to financing and insurance products
11. Strategic/partnering risk	The risk of the Private Partner and/or its sub-contractors not being the right choice to deliver the project; Contracting Authority intervention in the project; ownership changes; and disputes.	There is a wide pool of experienced and interested players in the private market; firms are able to smoothly transact and create partnerships to form strategic teams to carry out the PPP project	There are some experienced and interested players in the private market; firms can be moved to create partnerships & form strategic teams to carry out the PPP project with some aid from the Contracting Authority	There are little to no experienced and interested players in the private market
12. Disruptive technology risk	The risk that a new emerging technology unexpectedly displaces an established technology or the risk of obsolescence of equipment or materials used.	The project has basic technology and technical requirements that are not expected to change over the long-term period	The project has moderately complex technology and technical requirements that can be expected to remain relatively steady over the long-term period	The project has complex technology and technical requirements that can be expected to change rapidly over the long-term period

13. Force majeure risk	<p>The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.</p> <p><i>[Note: By nature, it is difficult to assess the level of FM risk for any project, given that FM covers all “unknown” risks to the project, including natural disasters, war, etc.]</i></p>	The project site is in a relatively safe/secure geographic area that is not exposed to natural or social risks	The project site is in a moderately safe/secure geographic area that has some exposure to natural or social risks	The project site is in an unsafe/insecure geographic area that has significant exposure to natural or social risks
14. MAGA risk	The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.	Government is relatively stable; there is strong political support for PPPs; there are no foreseen government actions / policies that will negatively affect the project or hamper the ability of the private partner to implement and earn from the project	Government is moderately stable; there is some political support for PPPs; there are no foreseen government actions / policies that will negatively affect the project or hamper the ability of the private partner to implement and earn from the project	Government is unstable; there is very little political support for PPPs; there are government actions / policies in the pipeline that may negatively affect the project or hamper the ability of the private partner to implement and earn from the project
15. Change in law risk	The risk of compliance with applicable law; and changes in law affecting performance of the project or the Private Partner's costs.	There are no foreseen changes in law that could create negative impacts particularly for the PPP project or the sector it is in	There may be changes in law that could create negative impacts particularly for the PPP project or the sector it is in	There are certain planned changes in law that could create negative impacts particularly for the PPP project or the sector it is in
16. Early termination risk	The risk of a project being terminated before its natural expiry on various grounds; the financial consequences of such termination; and the strength of the Contracting Authority's payment covenant.	There is strong commitment from the Contracting Authority to carry out the PPP project; there is strong interest and support within the private market for the PPP project	There is moderate commitment from the Contracting Authority to carry out the PPP project; there is moderate interest and support within the private market for the PPP project	There is low commitment from the Contracting Authority to carry out the PPP project; there is low interest and support within the private market for the PPP project

17. Condition at handback risk	The risk of deterioration of the project assets/land during the life of the PPP and the risk that the project assets/land are not in the contractually required condition at the time of handback to the Contracting Authority.	The project site is in a relatively safe/secure geographic area that is not exposed to natural or social risks; there is strong expertise within the private market to sustainably carry out the PPP project throughout a long-term period	The project site is in a moderately safe/secure geographic area that has moderate exposure to natural or social risks; there is moderate expertise within the private market to sustainably carry out the PPP project throughout a long-term period	The project site is in an insecure geographic area that has exposure to natural or social risks; there is little to no expertise within the private market to sustainably carry out the PPP project throughout a long-term period
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The preliminary risk assessment can help the Contracting Authority identify at an early stage the risks which need to be studied in detail during the Feasibility & Substantiation study period. The Feasibility & Substantiation study can then be more focused on gathering more information on the risks marked “high.” Note, however, that the assessment of each risk may change during the Feasibility & Substantiation study period: ratings can change as more information about the project is gathered and as further analysis is conducted.

4. Risk Allocation (Guidance)

Once the preliminary risk assessment is completed, the next step is to allocate the risk to the appropriate party. In allocating risks, the following guide questions can be considered:

- Which party is best able to control or manage the occurrence of the risk?
- Which party is best able to control or manage the impact of the risk?
- For a particular risk, which party has a greater incentive to develop risk mitigation strategies, either to control the occurrence of the risk or its impact?
- For risks that are typically allocated to the public party, might there be innovative opportunities to reduce whole-of-life costs by allocating (even if only partially) the risk to the private party?
- Which risk allocation would result in the lowest whole-of-life costs?
- Which risk allocation incentivizes preventative risk management, as opposed to reactive risk management?

Figure 4: Risk Allocation in Public-Private Partnerships: Maximizing value for money (Source: International Institute for Sustainable Development and IMG Rebel, 2015)

The [PPP Risk Allocation Tool](#) provides detailed recommendations on risk allocation, based on an allocation that typically maximizes value-for-money in PPP projects. Again, at this Step 1 of the risk management process, the recommended risk allocation can be used as a starting point for allocating risks and coming up with an initial project structure.

Note that after the Feasibility & Substantiation study is completed, the optimal risk allocation may depart from the recommended allocation provided for by this tool.

Several risks in the table below show that the risks may be assigned to public, private, or shared between the two. The determination of the risk allocation will depend on the specifics of the project. For instance, good international practice allows for *Demand risk* to be allocated to the public partner, private partner, or shared between the two. Taking demand risk as an example, if the project is envisioned to follow an availability payment structure due to the economics of the project (e.g., low willingness-to-pay by users), then demand risk is typically taken by the public partner. If the project, however, allows the private partner to collect fees from users, demand risk may be taken by the private partner. The revenue structure can also be a mix of both government payments and user fees, which means demand risk is shared between the public and private partners. Ultimately, the appropriate allocation of risks will depend on the circumstances of the specific project.

Risk-sharing between the public and private partners can also come in the form of a cost-sharing mechanism. For example, if the PPP contract needs to be terminated due to a prolonged *Force Majeure* event, the financial burden of such termination may be shared by the parties.

For more detail on this topic, refer to the *National PPP Contract Guidance and Standard Provisions*.

Another example would be for *Disruptive technology risk*: there could be a mechanism in place whereby the private partner absorbs the cost of an unanticipated upgrade in technology up to a certain amount, beyond which the public partner may shoulder the cost.

Table 4: Typical PPP Risk Allocation and Rationale

Risk	Rationale for Allocation (High-Level)	PPP Risk Allocation Tool Proposed Allocation		
		Public	Shared	Private
Phase: Pre-construction Period				
1. Land availability, access, and site risk	<ul style="list-style-type: none">Government has expropriation powers which private sector does not haveIt is best for the site (and project asset) to revert back to public sector after project period	✓		
2. Social risk	Government is ultimately responsible for social impact of infrastructure provision, but can be shared with private sector in terms of implementing social management measures during implementation of the project	✓	✓	
3. Environmental risk	<ul style="list-style-type: none">As part of identifying, selecting and acquiring the site, government retains responsibility for early environmental risk managementDuring implementation and throughout project life, (as part of its responsibility to manage construction and operations & maintenance) private sector is best placed to ensure compliance with environmental regulatory requirements		✓	✓
4. Financing risk	Generally transferred to the private sector to maximize value-for-money of a PPP project (in general, financing risk is assigned to the private sector as it is directly tied to design, construction and O&M risks which are typically transferred to the private sector in PPP projects)			✓
Phase: Construction Period				
5. Design risk	Generally transferred to the private sector to maximize value-for-money of a PPP project (in general, design risk is assigned to the private sector as it directly affects construction and operations risks, which are typically transferred to the private sector in PPP projects)			✓
6. Construction risk	Generally transferred to the private sector to maximize value-for-money of a PPP project			✓
7. Variations risk	General principle is that the party who initiates or requests for the change / variation in the contract will manage the costs arising from their request		✓	
Phase: Operations & Maintenance Period				
8. Operating risk	Generally transferred to the private sector to maximize value-for-money of a PPP project			✓
9. Demand risk	Allocation of demand risk is highly dependent on the circumstances of the specific project and would depend on the financial viability of the project given its revenue streams and the private market's appetite to take on this risk. While the Contracting Authority may have a preferred allocation for this risk, the feasibility of such allocation needs to be assessed during the Feasibility & Substantiation study stage.	✓	✓	✓

10. Financial markets risk	Typically shared between the public and private partners. While the private partner takes most of this risk as part of normal / ordinary-course business risk, Contracting Authority may take some of the risk (e.g., under an availability-payment based structure, the payments to private partner are typically at least partially indexed for inflation)		✓	
11. Strategic/partnering risk	Ultimately, private partner is responsible for ensuring that its consortium or its team has the required expertise / ability to carry out the project. This however can be seen as "shared" between the public and private partners because the failure of the private partner to fulfil its obligations will also ultimately become the Contracting Authority's problem.		✓	✓
12. Disruptive technology risk	Allocation depends on the circumstance of the project and reason for the requirement to upgrade technology. If private partner needs to upgrade technology or otherwise fail to meet its output requirements, then the risk is the private partner's. In some cases, government may require or initiate the upgrade in technology, and thus would share in this risk.		✓	
13. Force majeure risk	As neither public nor private partner would have control over the occurrence of Force Majeure risks, both parties typically share this risk		✓	
14. MAGA risk	Public sector has control / influence over the occurrence of any MAGA	✓		
15. Change in law risk	Public sector has control / influence over changes in law	✓		
16. Early termination risk	Early termination can occur for various reasons, either at the fault of the private or public partner, or both. As such, this risk is typically shared.		✓	
17. Condition at handback risk	Private partner has control over the facility throughout the life of the PPP contract. As such, this risk is typically allocated to private partner.			✓

5. Sample Preliminary Risk Assessment and Allocation Matrix (Step 1 Sample Output)

At the end of Stage 1, the risk management documentation may look like the following table (illustrative). As the project progresses to the succeeding steps of the risk management process, this table will evolve and information will be added and/or updated.

Reading Guide: The sections of the sample output which are highlighted in **yellow** are those which are **new** in the specific step of the risk management process being described. The sections highlighted in **gray** are those **carried over** from previous steps of the risk management process.

Table 5: Sample Preliminary Risk Assessment & Allocation Matrix (Step 1)

	Preliminary Risk Assessment				Preliminary Risk Allocation	
Pre-Construction Risks	Low	Medium	High	Comments	Allocation ¹⁰	Comments
1. Land availability, access, and site risk	[X]	[X]	[X]	[Add project detail available at pre-feasibility stage for each risk, if any]	Public	[Add project detail available at pre-feasibility stage, if any]
2. Social risk	[X]	[X]	[X]		Shared	
3. Environmental risk	[X]	[X]	[X]		Shared	
4. Financing risk	[X]	[X]	[X]		Private	
Construction Risks						
5. Design risk	[X]	[X]	[X]		Private	
6. Construction risk	[X]	[X]	[X]		Private	
7. Variations risk	[X]	[X]	[X]		Shared	
O&M Risks						
8. Operating risk	[X]	[X]	[X]		Private	
9. Demand risk	[X]	[X]	[X]		Private	
10. Financial markets risk	[X]	[X]	[X]		Shared	

¹⁰ Initial sample allocation. Allocation may change in subsequent steps of the risk management process.

11. Strategic/partnering risk	[X]	[X]	[X]		Shared	
12. Disruptive technology risk	[X]	[X]	[X]		Shared	
13. Force majeure risk	[X]	[X]	[X]		Shared	
14. MAGA risk	[X]	[X]	[X]		Public	
15. Change in law risk	[X]	[X]	[X]		Public	
16. Early termination risk	[X]	[X]	[X]		Shared	
17. Condition at handback risk	[X]	[X]	[X]		Private	

APPENDIX 2: STEP 2A – RISK ASSESSMENT & PROPOSED ALLOCATION

Part of the Feasibility & Substantiation study is the conduct of a more detailed risk analysis of the project (Step 2a). The starting point for this Step 2a is the Preliminary Risk Assessment & Allocation matrix from Step 1.

The main differences between the Step 1 and Step 2a risk registers are the following:

- **List of risks is expanded** and several risks are broken down further into sub-categories or sub-risks. From the preliminary list of 16 risks in Appendix 1 Table 4, for example, the risk matrix in Step 2a might be expanded to over 30 or 40 risks, depending on the findings of the Feasibility & Substantiation study;
- **Risk assessment becomes more detailed**, allowing the Contracting Authority to prioritize the risks and pay attention to those which are most critical, in terms of both impact and likelihood of risk (more in Appendix 2 Section 2 below)
- **Risk allocation** between public and private parties **becomes more nuanced**. For example, if a certain project risk is shared between the parties, the Step 2a risk matrix should provide detail on how exactly the risk will be shared (examples are provided further in Appendix 2 Section 3 below)

Remember that the objective of the Step 2a risk register is to serve as the framework for drafting the PPP Contract, which will be included in the bid documents to be made available to potential private partners at tendering stage. As such, the Step 2a risk register should be detailed enough for this purpose.

1. Updating list of risks

A sample updating of risks that provide a more appropriate level of detail for Step 2a of the risk management process is provided below. As in Step 1, the GIH [PPP Risk Allocation Tool](#) provides these detailed risks and can thus be used as a reference for this Step 2a. In addition, the National PPP Contract Guidance and Standard Provisions should likewise be consulted for this stage, as some nuances to the broad risk categories are broken down into more detailed risks. The National PPP Contract Guidance and Standard Provisions provide specific guidance on dealing with several of these risks.

Table 6: Updating List of Risks (Step 2a, Feasibility & Substantiation Study Phase)

Risk Category / Description	Sample Sub-categories	Description of sub-category
Land availability, access, and site risk <i>The risk associated with selecting land suitable for the project; providing it with good title and free of encumbrances; addressing indigenous rights; obtaining necessary planning approvals; providing access to the site; site security; and site and existing asset condition.</i>	<i>Site condition</i>	Risk that the geotechnical characteristics of the site create additional cost for site preparation and construction
	<i>Heritage / indigenous land rights</i>	Risk that the project will affect indigenous groups in the vicinity of the project site
	<i>Site security</i>	Risk that external events pose security threats to the project site (e.g., protests, political instability, etc.)

Operating risk <i>The risk of events affecting performance or increasing costs beyond modelled costs; performance standards and price; availability of resources; intellectual property rights compliance; health and safety; compliance with maintenance standards; industrial action; and vandalism.</i>	<i>Operating costs</i>	Risk of increases in projected operating costs, arising from a variety of potential causes (e.g., errors in prior cost estimates, or variations due to external factors such as extreme weather events)
	<i>Operating performance</i>	Risk of poor service, or the asset being operated at a level that does not meet the performance standards / specifications under the PPP contract

2. Risk assessment (Guidance)

From the basic rating scale of Low, Medium, High in Step 1, the risk assessment in Step 2a of the risk management process can be disaggregated by looking at two factors affecting the criticality of risk: (i) **impact**, or the magnitude of consequences arising from the occurrence of risk, and (ii) **likelihood**, the probability of the risk occurring. Breaking the risk assessment down into these two factors allows the Contracting Authority to gain a better understanding of what drives each risk. Risks which are projected to be high impact and high in likelihood are those which need to be paid close attention to in terms of planning risk mitigation strategies (Step 2b).

A slightly more nuanced risk rating process could be carried out as follows in this Step 2a:

Table 7: Detailed Risk Assessment (Step 2a)

Impact <i>If the risk occurs, how impactful will the risk be on the sustainability of the project as a whole?</i>			Likelihood <i>How probable is the occurrence of risk?</i>			Risk Rating (= Impact x Likelihood)	Risk Prioritization (Low, Med, High)
Low 1	Medium 2	High 3	Low 1	Medium 2	High 3	[Multiply impact and likelihood scores]	Risk Prioritization given Risk Rating Low = 1 to 2 Med = 3 to 4 High = 6 to 9

3. Updating risk allocation (Guidance)

Using the updated list of risks, the risk allocation will also be updated. The table below illustrates the updated risk allocation given the updated list of risks from Appendix 2 Section 2 above:

Table 8: Updated Risk Allocation (Step 2a, Feasibility & Substantiation Study Phase)

Risk	Sub-Category	Proposed Allocation			Description
		Public	Shared	Private	
Land availability, access, and site risk	Site condition			X	[Provide details on each risk based on the specifics of the project and the findings from the Feasibility & Substantiation study]
	Heritage / indigenous land rights	X			
	Site security		X		
Operating risk	Operating costs			X	
	Operating performance			X	

4. Risk assessment & proposed allocation (Sample output)

Reading Guide: The sections of the sample output which are highlighted in **yellow** are those which are **new** in the specific step of the risk management process being described. The sections highlighted in **gray** are those **carried over** from previous steps of the risk management process.

Table 9: Sample Risk Assessment & Proposed Allocation (Step 2a, Feasibility & Substantiation Study Phase)

Risk Identification		Risk Assessment (Illustrative)				Risk Allocation (Illustrative)	
Risk	Sub-category	Impact	Likelihood	Risk Rating	Risk Prioritization	Allocation	Description
Pre-Construction Risks							
1. Land availability, access, and site risk	Site condition	3	2	6	High	Public	[Provide details on each risk based on the specifics of the project and the findings from the Feasibility & Substantiation study]
	Heritage / indigenous land rights	3	1	3	Low	Shared	
	Site security	3	1	3	Low	Shared	
2. Risk 2	Sub-category #1						
	Sub-category #2						
	Sub-category #3						
	Sub-category #4						
3. Risk 3	Sub-category #1						
	Sub-category #2						
Construction Risks							
4. Risk 4	Sub-category #1						
5. Risk 5	Sub-category #1						
6. Risk 6	Sub-category #1						
O&M Risks							
7. Operating risk	Operating costs	3	1	3	Low	Private	
	Operating performance	3	1	3	Low	Private	

APPENDIX 3: RISK MITIGATION PLAN

1. Types of risk mitigation measures

In parallel with the development of the a allocation matrix (in Step 2a), it is best practice for the Contracting Authority to also prepare a risk mitigation plan: a register or list of mitigation actions or steps corresponding to each project risk, which either party in the PPP contract can take in order to mitigate either the likelihood of occurrence or the impact of the risk. The risk mitigation plan will form part of the Feasibility & Substantiation study.

Risk mitigation measures can fall under three broad categories:

Type of risk mitigation	Description	Examples of risk mitigation actions ¹¹
Process design-related measures	Actions which seek to minimize the likelihood of occurrence of risks by building in mitigation measures into the project preparation and procurement process of the PPP project. These are under the control of the public partner or the Contracting Authority and occur prior to the selection of a private partner.	<ul style="list-style-type: none"> • Hiring experienced transaction advisers to ensure the Feasibility & Substantiation study is of high quality and that the procurement design is well structured • Setting adequate technical and financial qualification criteria for bidders during the tendering process • Running an efficient and fair procurement process where bidders can healthily compete at a level playing field, increasing the chances of selecting the most qualified and most committed team for the project • Timely involvement of internal stakeholders and contract management team who will take over the implementation of the PPP project, and who will be in charge of the actual management of risks throughout the life of the PPP contract
Direct risk mitigation measures	Actions which directly address the specific project risk and which can be undertaken by either party to the PPP contract	To mitigate site condition risk , the Contracting Authority can carry out ground surveys during the Feasibility & Substantiation study phase. These early surveys will help inform site selection, thereby directly minimizing the likelihood of the risk occurring. The surveys can also be made available to interested bidders, who can then conduct further analysis on the surveys and conduct an informed assessment of site risk and carry out related mitigation actions necessary for the design, construction and operations & maintenance of the project.

¹¹ Risk mitigation examples from the [PPP Risk Allocation Tool](#).

Financial risk transfer to third parties	<p>Actions which outsource the financial cost of the occurrence and impact of a project risk. These can be undertaken by either party to the PPP contract</p> <ul style="list-style-type: none"> • The Contracting Authority can require performance security to be provided by the private partner to safeguard against the financial impact of certain risks. If the risk occurs, the performance security can be drawn]to remediate the risk. In PPP contracts, the major contractors carrying out the works (e.g. construction contractor, O&M contractor) are typically required to provide a security package—which may include a performance bond, payment bond and or liquid security (e.g. letter of credit) to the SPV (private partner equity investors). Minimum requirements for such performance security may be mandated by the Contracting Authority based on local requirements (which are sometimes dictated by law or regulation), however the lenders (and rating agencies, if applicable) are usually the primary drivers of security package requirements in PPP transactions. • The private partner can purchase specific insurance products (to the extent that they are available in the market) to mitigate the impact of certain risks. For example, third party liability insurance can be purchased by the private partner to help mitigate the impact of social risk. <p>Note that the securities to be required by the Contracting Authority and the insurances to be required of the private partner are typically defined during the PPP contract drafting stage. It is common practice to have insurance experts consulted by the transaction advisory team who will be helping the Contracting Authority put the contract and the tender process together.</p>
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2. Sample risk mitigation matrix

The mitigation plan for each risk can be added as an additional column to the Risk Assessment & Proposed Allocation matrix from Step 2a.

Reading Guide: The sections of the sample output which are highlighted in **yellow** are those which are **new** in the specific step of the risk management process being described. The sections highlighted in **gray** are those **carried over** from previous steps of the risk management process.

Table 10: Sample Risk Mitigation Matrix (Step 2b, Feasibility & Substantiation Study Phase)

Risk Identification		Risk Assessment				Risk Allocation		Risk Mitigation
Risk	Sub-category	Impact	Likelihood	Risk Rating	Risk Prioritization	Allocation	Description	Steps
Pre-Construction Risks								
1. Land availability, access, and site risk	Site condition	3	2	6	High	Public	<i>[Provide details on each risk based on the specifics of the project and the findings from the Feasibility & Substantiation study]</i>	<i>[Provide risk mitigation steps to be taken to address each risk]</i>
	Heritage / indigenous land rights	3	1	3	Low	Shared		
	Site security	3	1	3	Low	Shared		
Construction Risks								
O&M Risks								
7. Operating risk	Operating costs	3	1	3	Low	Private		
	Operating performance	3	1	3	Low	Private		

APPENDIX 4: SECTOR-SPECIFIC RISKS AND ALLOCATION APPROACHES

The draft public policy document on PPP development in Romania identifies three main priority sectors for the use of PPP by the Government of Romania: transportation, health and education.

1. Risk differences: Economic and social infrastructure

A key difference among these sectors is that broadly, transportation projects are classified as *economic* infrastructure, while projects in health and education (i.e., hospitals, schools) are classified as *social* infrastructure. The main difference between these sectors lies in their ability to generate revenues from their users: economic infrastructure are generally those assets for which fees can be levied for the use of the facility and as such, government subsidies may be limited or not required, whereas users of social infrastructure typically do not pay for the use of the facility per se, and as such, government funding is required to pay for the project.

While the risk register for any project under the priority sectors can be unique, two risks can be expected to differ between economic infrastructure projects (e.g., transport) and social infrastructure projects (e.g., hospitals and schools). These are summarized below:

	Economic infrastructure	Social infrastructure	Points to Consider by Contracting Authority
Demand / revenue risk	<ul style="list-style-type: none"> Depending on financial viability of the project (which can be assessed through the affordability assessment), can be assigned to either the Contracting Authority or to the private partner If revenues from user fees are sufficient to cover project costs and the required return of the private partner, the risk is typically assigned to the private partner If revenues from user fees are insufficient, the risk can either be assigned completely to the Contracting Authority (which can then pay the private partner through availability payments, for example) or can be shared between the Contracting 	<ul style="list-style-type: none"> If no fees are charged to users for the use of the facility (which is the case for most social infrastructure projects), the risk is typically assigned to the Contracting Authority. The private partner receives its compensation fully in the form of government payments. 	<p><i>If the affordability assessment shows the need for government funding support, how much support can be provided to the project (especially if it is a social infrastructure project)?</i></p>

	Authority and the private partner (e.g., private partner receives revenues from the project and some form of government contribution to fill any gaps in financial viability)		
Operating risk	<ul style="list-style-type: none"> Operating risk is typically assigned to the private partner to maximize value-for-money. Transferring the design, construction and operations & maintenance risks to the private partner creates an incentive to implement the project in a manner that is most sustainable for the long-term duration of the PPP contract (see D4 Value for Money Guidance). 	<ul style="list-style-type: none"> Historically, the scope of the private partner in social infrastructure PPPs was limited to the construction of the facility. Upon construction completion, the facility would be turned over to the Contracting Authority, which kept the operating risk. However, “operator-led” PPPs are now becoming more common in some social infrastructure sectors such as healthcare, where the private partner would construct the facility and take over its O&M (and in some cases, even the provision of non-clinical services or equipment, although this is not very common in the EU).¹² The Contracting Authority then regulates the performance of the private partner through contractual mechanisms such as KPIs and penalties for sub-par performance. 	<p><i>If operating risk is transferred to the private partner, what key performance outcomes need to be clearly outlined in the PPP contract? What payment incentives or disincentives will be put in place to hold the private partner to account?</i></p>

It is useful to note that the allocation of these risks influence the statistical treatment of the specific PPP project, and thereby the government’s debt and deficit position. This is elaborated further in D7 – Government Debt and Deficit Guidance.

¹² World Bank Blogs. [“Build and operate’ increasingly common in social infrastructure.”](#) May 2018.

2. Typical key risks for the priority sectors

As part of the detailed risk matrices provided in the [GIH PPP Risk Allocation Tool](#), the following key risks have been identified as particularly critical for the priority sectors. Note, again, that each project will have its own unique circumstances and characteristics for which these risks may or may not be applicable. By the nature of the sectors, however, these are risks that commonly emerge as key.

More detail on each risk, their proposed allocation, and recommended mitigation measures can be found in the reference tool.

	Transport (Road)	Health (Hospitals)	Education (Schools)
Key Risks (as identified in the GIH PPP Risk Allocation Tool)	<ul style="list-style-type: none"> • Land acquisition and site risk – risk could be high depending on length and location of road • Demand/revenue risk – if demand risk is allocated to private partner, their view of demand/revenue risk will be an important factor in terms of pricing the project • Environmental/social risk – potential impact on adjacent properties, habitats, communities (may be high, depending again on length and location of road) • Completion/operation commencement risk – on-time and on-budget completion of construction may be a challenge depending on complexity of road design and site terrain 	<ul style="list-style-type: none"> • Existing asset condition – relevant for rehabilitation projects; existing assets will impact design, construction, O&M risk • Design risk and change orders – hospitals tend to have complex technical requirements and as such, are more prone to design risk and potential change orders • Medical equipment – if Contracting Authority retains responsibility to provide medical equipment, installation needs to be coordinated with private partner's construction schedule • Clinical functionality – if hospital needs to retain functionality during the project, functionality requirements need to be included in private partner's KPIs • Interface – interface of government staff with the built asset, especially during operations 	<ul style="list-style-type: none"> • Existing asset condition – relevant for rehabilitation projects; existing assets will impact design, construction, O&M risk • Construction risk – specifically construction timing and interface with normal school operating conditions • Staffing interface – interface of government staff with the built asset, especially during operations • Environmental and health standards – increased attention on environmental and health standards given effect on children/pupils • Vandalism risk – relevant for schools in general as the facilities can be accessed by multiple users (e.g., students, visitors, employees) and petty crime may be prevalent

		<ul style="list-style-type: none">• Environmental and health standards – increased attention on environmental and health standards given effect on patients	
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