Global Infrastructure Hub

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PPP Risk Allocation Tool 2019 Edition - Water and Waste

In collaboration with Allen & Overy

A G20 INITIATIVE

Foreword

Tackling large infrastructure gaps remains a priority around the world and governments are increasingly looking to draw on the private sector through long-term public-private partnerships (PPPs) to help deliver major infrastructure projects, because they recognise that private sector involvement can drive innovation and efficiency and provide additional financing solutions.

The increased attention to PPP contracts means that governments need to take a longer-term approach to the identification, allocation and ongoing management of project risks, which is at the centre of every PPP transaction.

As part of its leading practices mandate, the GI Hub has developed an update to its PPP Risk Allocation Tool originally published in 2016. As was the case with the 2016 version, the new PPP Risk Allocation Tool 2019 Edition contains a set of annotated risk allocation matrices for PPP transactions addressing the risks and issues on a sector by sector basis.

The PPP Risk Allocation Tool 2019 Edition contains matrices showing the allocation of risks as between the public and private partners in typical PPP transactions for 19 different types of projects, including both economic infrastructure (such as transport, energy, telecommunications and water projects) and social infrastructure (such as school and hospital projects). For each sector, there is also an identification of key risk areas and a discussion of risk allocation trends.

Each matrix is accompanied by annotations, explaining the rationale for the allocations, mitigative measures and possible government support arrangements. The annotations also describe alternative arrangements for countries with differing levels of PPP market maturity.

A deep understanding of the risk allocation arrangements is a precondition to the drafting of every successful PPP contract. The appropriate application of risk allocation principles is what determines whether a PPP project will satisfy the needs of the government, achieve value for money and be financially viable for the private sector (i.e. whether investors will be willing to commit financial resources to the project).

The GI Hub engaged the global law firm Allen & Overy to prepare the updated guidance tool. Norton Rose Fulbright, another global law firm, prepared the initial 2016 edition, and this 2019 edition builds on that work.

The guidance tool is closely aligned with the World Bank Group's Guidance on PPP Contractual Provisions 2019 Edition, which was also developed with the assistance of Allen & Overy.

"With a close alignment to the G20's focus on quality infrastructure and based on leading practices from around the world, the PPP Risk Allocation Tool provides important and practical information to governments looking to utilise PPP approaches to deliver the right outcomes for all parties. This tool complements nicely the existing PPP body of knowledge, and particularly the PPP Contractual Provisions report from the World Bank which was developed in close collaboration with the present tool."

Marie Lam-Frendo
Chief Executive Officer, Global Infrastructure Hub

"Robust and realistic risk allocation is vital for the long-term success of a PPP project. Allen & Overy is fully aligned with the mission of the Global Infrastructure Hub to build capacity to develop sustainable public-private partnerships. Built on global experience, these risk allocation tools support considered choices from the early onset of a PPP process and throughout negotiations to create value for all stakeholders. We aim for these tools to help unlock high impact infrastructure investment".

Helga Van Peer
Head of Global Public Law Group, Allen & Overy

Testimonials

"Risk allocation has a direct impact on the pricing of a PPP. It determines whether an investment will be perceived as fair, and whether it is affordable for tax payers and consumers on the one hand, while being financeable for the private sector on the other. The GI Hub Risk Allocation Tool is an important tool for contracting authorities when deciding whether and how to deliver an asset and/or service as a PPP. This critical contribution to the global framework for private investment in infrastructure complements a long list of collaborative outputs from GI Hub and the MDB community, including the World Bank. For example, the "World Bank Guidance on PPP Contractual Provisions" is a companion piece that complements the risk allocation matrix by providing examples of how some key risks can be allocated in PPP contractual agreements".

Jordan Schwartz
Director for Infrastructure Finance,
PPPs and Guarantees (IPG)
The World Bank

"Proper risk allocation and management is the cornerstone to the long-term success of PPP projects. It is quite simple, if project risks are not formally identified, analysed, and monitored or controlled there is great probability that the project scope, schedule, and budget may eventually be threatened. We normally have a lot to worry about when managing projects so why not stay in front of the curve and be proactive in managing risks? Each time the benefits outweigh the costs. The Risk Management Tool therefore, comes in handy in contributing to the significant body of knowledge required in PPP preparation and implementation".

Beatrice Florah Ikilai
Vice Chair
United Nations Economic Commission for Europe
Bureau of Public Private Partnerships,
Africa Representative

"Allocating risks appropriately among parties is essential to PPP project with the aim to improve quality and efficiency of services delivery and get value for money. It plays a vital role for both public and private sectors in their long-term partnerships. The PPP Risk Allocation Tool 2019 Edition has enriched risk system of PPP projects with a broad vision, containing identification and allocation matrices with annotations extracted from leading practices for 19 different types of projects. This will definitely give all PPP practitioners a more comprehensive perspective and deeper understanding on risks management in PPP contracts. Hope this new edition may facilitate further development of PPP projects worldwide".

Jiao Xiaoping
Director General
Head of China Public Private Partnerships Center

"Risk allocation is the epicenter or "heart" of every PPP transaction and remains a critical precondition for the successful delivery of any PPP project. The appropriate application of risk allocation and management principles enshrined in the guidance tool developed by the GI Hub is vital to ensuring bankability, sustainability and long-term viability of PPP procurement interventions for infrastructure service delivery in Nigeria and other EMDE countries. The extension of the guidance tool to social infrastructure PPP projects critical to quality of life and HDI growth is indeed very welcome.

To ensure the success of PPP procurement methodology for infrastructure projects, it is crucial for all PPP procurement ecosystem stakeholders to manage risks via a flawless life-cycle perspective, in which risks are identified and assessed at the earliest possible stage, and are then optimally allocated to the parties who are in the best position to manage them effectively and efficiently. Undoubtedly, the GI Hub guidance tool is a critical contribution to the PPP body of knowledge for practitioners and an invaluable and indispensable document for PPP procurement methodology growth in EMDE countries and indeed worldwide".

Engr. Chidi K. C. Izuwah, Snr.
Director General/CEO
The Presidency, Infrastructure Concession Regulatory Commission, Abuja, Nigeria

"Proper risk allocation and its management is critical to the long-term success of a PPP. The PPP Risk Management tool is a must-use reference for PPP professionals, both in the public and private sector, as they look to structure transactions that deliver value for money. Allocating risks to the party most capable of managing and mitigating those risks ensures these long-term partnerships can stand the test of time".

Yoji Morishita
Head Office of Public Private Partnerships
Asian Development Bank

"Risk management stands at the center of successful PPP projects. GI Hub Risk Allocation Tool is a useful tool that reminds public and private parties of common risks associated with specific sectors and guides them in determining which party is best capable to manage it. This tool is an important addition to existing body of knowledge on contract development and management and will help to strengthen bankability of projects structured as PPPs".

Noman Siddiqui
Manager, PPP Division,
Islamic Development Bank

Introduction

The PPP Risk Allocation Tool 2019 Edition is the second edition of the guidance tool, with the first edition focused only on economic infrastructure in the transport, energy, water and waste sectors. The 2016 version of the guidance tool was delivered in 2016 by global law firm Norton Rose Fulbright with the GI Hub team led by Mark Moseley.

The updated PPP Risk Allocation Tool 2019 Edition was delivered by Allen & Overy and builds on the earlier 2016 work with the GI Hub team led by Jack Handford and close continued involvement from Mark Moseley, Morag Baird and Maud De Vautibault. In addition to economic infrastructure projects, the 2019 version of the guidance tool contains risk allocation matrices for social infrastructure projects (such as hospitals and schools), submarine cables and industrial parks.

The PPP Risk Allocation Tool 2019 Edition is based on the collective global experience of over 20 senior lawyers from Allen & Overy. These lawyers have extensive experience advising project grantors and regulators, sponsors, proponents, funders and contractors in both established and emerging markets in civil law and common law jurisdictions as well as those with Islamic legal systems and on a wide range of projects.

Two workshops were held, in Istanbul in November 2018 and in Singapore in April 2019, to garner feedback on earlier drafts of the PPP Risk Allocation Tool 2019 Edition. Additional feedback was sought more broadly from those working in the industry or representing various interest groups through online public consultation. Norton Rose Fulbright continued to play a role in contributing to the evolution of the PPP Risk Allocation Tool and additional key contributions were received from the World Bank, the European PPP Expertise Centre and the Asian Development Bank.

This document is one of four documents that make up the PPP Risk Allocation Tool 2019 Edition and is focused on projects in the water and waste sector. It contains, an introduction to the matrices, with the glossary and the water and waste matrices (namely the water desalination, water distribution and waste to energy matrices) contained in the Appendices. The remaining three documents that make up the compete guidance tool focus on transport, social infrastructure and energy, communications and industrial parks.

The diversity of experiences across markets means that particular risk allocation arrangements are not necessarily suitable for every market. Each of the matrices that will be found in the PPP Risk Allocation Tool 2019 Edition reflects positions reached in projects that have been shown to be bankable (i.e. they have reached financial close) but, as indicated, each matrix will contain annotations discussing alternative arrangements for different circumstances.

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Aim of the PPP Risk Allocation Tool 2019 Edition

The *PPP Risk Allocation Tool 2019 Edition* aims to provide governments (and, additionally, private sector stakeholders) with targeted guidance on the appropriate allocation of project risks between the government contracting authority (Contracting Authority) and the private counterparty (Private Partner) in a PPP contract. Risk allocation is at the centre of every PPP transaction, and a deep understanding of the risk allocation arrangements is a precondition to the drafting of every successful PPP contract.

The appropriate application of risk allocation principles is what determines whether a PPP project will satisfy the needs of the government, achieve value for money and be financially viable for the private sector (i.e. whether investors will be willing to commit financial resources to the project). The approach taken was to base the guidance tool on PPP transactions that have reached financial close, but drawing also on the experience of projects that have failed to reach that stage. Financial close is often seen as a proof of success, but reaching financial close does not mean that value for money has been achieved for the public sector. Reaching financial close does not automatically constitute proof of value for money. For example, where the risk allocation has been too favorable to the Private Partner (e.g. the public sector granting excessively generous guarantees) or the Private Partner is taking on and computing expensive risk premiums for risks that are not best managed by the private sector, these circumstances may not represent value for money for the public sector. Contracting Authorities will want to strike a balance between bankability and value for money. In addition, appropriate risk allocation will significantly increase the chances of procuring a project that is sustainable over the long term.

The essence of the guidance tool is a set of 19 risk allocation matrices, showing the allocation of risks between the Contracting Authority and the Private Partner in various types of PPP transactions, along with related annotations on the rationale for the allocations, as well as potential mitigative measures and government support arrangements. The sample matrices cover projects for both economic and social infrastructure facilities.

This guidance tool is aimed to be used in conjunction with the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. Once an appropriate allocation of risks between a Contracting Authority and a Private Partner is decided upon, the parties need to appropriately document that risk allocation in an agreement or contract to ensure that each party can effectively enforce their rights. The World Bank document provides drafting and guidance for specific provisions that are typically included in PPP contractual arrangements. In addition, it provides detailed analysis on the rationale underlying these provisions and how they have evolved over time.

Although the risk matrices in this reference tool focus on risk allocation that may be agreed in a PPP contract, more detailed risk matrices often play a broader role as a living tool that evolves and is refined through time, with different functions through the various stages of a project. For example, a more detailed risk matrix can be used to support ongoing decision-making post signature, during construction and operations (as a continuing tool for contract management). See also PPP Project Preparation and Delivery and Detailed Risk Identification and Analysis.

As well as PPP structures, there are other non-PPP contractual structures and procurement models that Contracting Authorities can use to deliver infrastructure with private sector involvement. These include more traditional procurement of just the construction (or rehabilitation) of infrastructure, or procurement of standalone maintenance contracts.

The risks addressed in this guidance tool and much of the risk allocation guidance will be relevant to different contractual structures, but will need to be adapted appropriately taking into account the scope and duration of the relevant contract and financing methods (such as whether there is a need for long term third party lending).

PPP risk allocation and contract drafting should be also considered in the broader context of project preparation. Project preparation is widely accepted as a key driver to ensure investment in infrastructure is transformed into positive outcomes for the public. This is particularly true in the case of PPPs, as they are complicated arrangements for the delivery of infrastructure. A PPP contract that is structured around a project that does not deliver the social benefits in a sustainable manner will have a negative impact irrespective of how well the contract is structured and drafted.

Together with the World Bank guidance, an ancillary aim of the *PPP Risk Allocation Tool 2019 Edition* is to help to develop greater consistency and standardisation in the way that PPP contracts are structured and drafted. With a growing focus

on delivering infrastructure using PPP methods, consistency and standardisation can play an important role in providing efficiency gains for governments, as well as predictability for private sector participants looking to enter new countries or markets, thereby reducing overall costs.

As is the case with any guidance, care must be exercised in adapting the guidance tool to the specific characteristics of any given project. PPP project risks vary depending on the country or region where the project is located, the nature of the PPP project and the assets and services involved. Even within the same sub-sector, the individual characteristics of each project make it inherently problematic to suggest a 'one size fits all' risk matrix. The risk categories contained in the matrices in this guidance tool set out the key risks that are generally applicable to the sub-sector in question. There will, however, inevitably be more detailed risk identification required in individual projects, as well as additional risks to take into account in building a risk matrix which is specific to the project concerned. Procuring Authorities should use the risk allocation matrices contained in this guidance tool as a starting point, but always recognise that there will be additional project-specific risks and issues that need to be addressed.

In addition, the risk allocation and contractual drafting processes should include consideration of local laws and market conditions. Specific market considerations and differences in local laws (including differences in civil law, common law and specific jurisdictions) are discussed in detail throughout this guidance tool, including in the sub-sector specific risk allocation matrices. The guidance tool can therefore inform Procuring Authorities procuring PPP projects in any jurisdiction, in conjunction with professional legal advice which is jurisdiction and project-specific.

Risk Allocation in PPP Contracts

The underlying principle of risk allocation in a PPP transaction is that risks should be allocated to the party best able to bear – or most incentivised to bear – those risks. This involves identifying which party is best able to manage the likelihood that such risks will occur, as well as to manage impacts if they do eventuate. Although the principle is widely known and accepted, operationalising the principle in a detailed PPP contract is a complex task, requiring deep analysis.

From the Contracting Authority's perspective, the bankability of a PPP project is often a key consideration in determining if an infrastructure project can be procured using a PPP approach. However, governments should not just consider bankability, but also value for money and robust risk allocation. i.e. a project can be bankable, but not deliver value for money because a Contracting Authority is transferring risks to the private sector that could be more efficiently managed by the government. PPP is not a procurement method which transfers all risk to the Private Partner. There will always be some risks for which the Contracting Authority should be wholly or partly responsible.

In general terms, the Contracting Authority should retain those risks that are not realistically capable of being properly assessed or efficiently priced by the private sector market or where the Contracting Authority can manage and price the risk in a more efficient manner. If risks are carefully assessed and transferred to the party best able to control or mitigate them, this should result in a reduction of overall project costs, and thereby improve value for money for the government. This can be achieved in several ways:

- less expensive risk premiums will be charged by bidders;
- projects will be attractive to multiple bidders, creating competitive pricing tension; and
- the infrastructure services will be delivered on a sustainable basis, due to lower rates of disputes, defaults, renegotiation and insolvency.

If risks are not allocated properly, the Contracting Authority may not be able to generate enough interest for the project, with the result that experienced bidders may not be willing to participate in the tender process or may withdraw after an initial expression of interest. This can lead to a failed tender process (where there are no or very few bidders) or to a flawed process with only inexperienced bidders or speculative bids.

The parties to a PPP contract should also strive to achieve a balanced and reasonable risk allocation that will provide an appropriate basis for a long-term partnership. PPP contracts typically run for a significant period of time, typically between 15 and 30 years, and poor risk allocation can result in the project failing before the end of its expected lifespan, due to excessive claims, disputes, requests for renegotiation, insolvency or termination.

It is important for Procuring Authorities to have an understanding of the corporate structure of a Private Partner in a PPP transaction, so as to better understand which risks can be appropriately transferred to the Private Partner, and which should be retained by the Contracting Authority. From the Private Partners' perspective, risk will be managed primarily by reallocating it to the main subcontractors, i.e. the construction contractor and the operations and maintenance contractor. The availability of insurance or hedging will also be a key consideration, and the Private Partner will be required to place certain insurances by both its lenders and the Contracting Authority. While PPP projects usually involve limited recourse to the Private Partner's shareholders, its shareholders may also provide some degree of support to lenders, or to the Contracting Authority, to cover specific risks.

In assessing the likely cost impact, the parties may look at each other's ability to bear such costs and the related impact on price, as well as whether and how the cost impact could be offset or passed on by, for example, increasing the price of the service to end-users (in the case of user-pay PPPs) and/or by spreading the cost across taxpayers (in the case of government-pay PPPs).

Conducting 'market soundings' of the risk appetite of the private sector (including potential lenders, equity investors and contractors) in advance of the formal procurement process will allow the Contracting Authority to inform itself of, and take into account, key issues before finalising the risk allocations for a proposed transaction and enable that risk allocation to be tendered among several competing bidders.

The Contracting Authority may also obtain some comfort (though not as a substitute for its own due diligence) from the involvement of private sector third party funders who go through a rigorous process to satisfy themselves that the PPP Project is bankable. This can give the Contracting Authority additional reassurance in terms of its own (and its advisers') assessment of the Private Partner's ability to successfully deliver the PPP Project.

Scope of the PPP Risk Allocation Tool 2019 Edition

The primary objective of this *PPP Risk Allocation Tool 2019 Edition* is to provide additional guidance to countries that wish to develop a programme of PPP transactions. The desired outcome is that countries will have a useful reference guide to assist with their understanding of typical PPP risk allocation arrangements. The risks identified in the *PPP Risk Allocation Tool 2019 Edition* are risks that can be allocated and mitigated between the Contracting Authority and the Private Partner, primarily addressed through the PPP, concession or project agreement or the underlying law. Other risks - such as government procurement risks, private sector financial and performance risks, third party intervention/delay and the risks particularly associated with unsolicited projects - are outside the scope of this guidance tool.

The matrices assume a project financed project structure. There may be projects (particularly smaller projects) that are not project financed but are, instead, corporate financed (such as projects financed on the balance sheet of a construction contractor or an operating company). The focus of this guidance tool is on more complex project financed structures, but although some of the risk allocation guidance is specific to project financed structures (such as termination compensation), much of the risk allocation will be relevant to both project financed and corporate financed PPP structures.

The document also provides guidance for a wider range of contract structures, as they address risks that are key to any infrastructure procurement method (whether that be a PPP contract or a more traditional design and build contract), such as land availability, environmental risk, design risk and construction risk.

The initial 2016 edition of the guidance tool provided commentary in the transport, energy and water and waste sectors. In this *PPP Risk Allocation Tool 2019 Edition*, the guidance has been expanded to include new projects in the social and telecommunications sectors, with the result being that the guidance tool now contains 19 sample risk allocation matrices. In addition, the original 12 risk allocation matrices have been updated, building on the 2016 work, to reflect developments in global leading practices and feedback received since 2016. The 19 sample risk allocation matrices in this 2019 edition of the guidance tool are set out below, with the new project types marked with an asterisk.

Transport Sector

1. Road
2. Airport
3. Light Rail
4. Heavy Rail
5. Port

Energy Sector

6. Photovoltaic Solar Plant
7. Hydro Power
8. Power Transmission
9. Natural Gas Distribution

Communications Sector

10. Submarine Cable*

Water and Waste Sector

11. Water Desalination
12. Water Distribution
13. Waste to Energy Plant*

Social Infrastructure Sector

14. School*
15. Hospital*
16. Social Housing *
17. Prison*
18. Government Offices *

Other

19. Industrial Park*

PPP Project Preparation and Delivery

PPP risk allocation and contract drafting should be considered in the broader context of PPP project preparation and delivery. A typical process of preparing for and delivering a PPP project involves the identification of infrastructure priorities, feasibility analysis, deciding to deliver the project using a PPP approach, project structuring, procurement, construction, operations and finally handback.

This guidance tool does not purport to act as a complete guide to PPP project preparation and delivery; instead it focuses on one area of the process - namely the structuring of the project in terms of risk allocation - which is complicated, and can lead to negative outcomes if it is not properly handled. However, risk allocation is only one of the critical elements of the process. Good risk allocation in a PPP contract will not fix a project that is economically unviable or not well prepared. Similarly, it won't make a project socially acceptable or ensure its effective management through construction and operations. For completeness, this section provides a brief contextual background to typical preparation and delivery processes and provides links to additional guidance on leading practices in other areas of PPP project preparation and delivery.

Feasibility and Decision to use a PPP Approach

Before procuring any project, the Contracting Authority should carry out a feasibility study for the project, looking at all relevant issues including land requirements and title, access and security, site condition, demand, necessary approvals and economic, social and environmental impacts. A project needs to go through these feasibility processes irrespective of which procurement option is being chosen to deliver the project.

The use of a PPP approach is then simply one of the procurement options available to a Contracting Authority that is seeking to provide new infrastructure services. The Contracting Authority should choose the procurement method that provides the best value for money, and a PPP approach will not be the right choice in all cases. Most of the other methods available to governments typically also involve some level of private sector involvement, whether through traditional procurement of the design and construction of an asset, the outsourcing of operation of an asset or service, or through a joint venture arrangement, a privatisation transaction or the establishment of regulated business.

This guidance tool specifically addresses risk allocation in a PPP contract, assuming that the Contracting Authority has carried out a thorough analysis in relation to how best to procure its infrastructure and has concluded that a PPP procurement is the right method for the project in question. In coming to this conclusion, the Contracting Authority may have its own government procurement guidance to follow and can also draw on the GI Hub's *Governmental Processes Facilitating Infrastructure Project Preparation Report*[1] and other guidance material, as described below.

Project Structuring

Project structuring is the process of configuring the legal obligations of the public and private parties in the proposed project, and these obligations will be expressed in the draft contract often found in the request for proposals package sent to prospective bidders. Project structuring should take place after a

1 Available at https://www.gihub.org/project-preparation/.

government has decided to use a PPP approach, and before the procurement process begins.

A key aspect of project structuring is the allocation of risks as between the Contracting Authority and the Private Partner, but this allocation can only be done after all the project risks have been identified and analysed. This process of identification and analysis is described below in the next section of this introduction, titled "Detailed Risk Identification and Analysis". Once that identification and analysis has taken place, this guidance tool can then be used to consider the most appropriate allocation arrangements for each particular risk detailed.

Once an appropriate allocation of risks between a Contracting Authority and a Private Partner has been decided upon, the next step in the project structuring process is to appropriately document the proposed risk allocation in an agreement or contract to ensure that each party can effectively enforce their rights. As noted above, the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*[2] provides drafting guidance for specific provisions that are typically included in PPP contractual arrangements, and provides detailed analysis on the rationale underlying the contractual drafting options.

The European PPP Excellence Centre's Termination and Force Majeure Provisions in PPP Contracts[3] and State Guarantees in PPPs[4] guidance documents provide additional important guidance on the structuring of PPP projects.

Procurement

Both this guidance tool and the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition* are also relevant to the procurement stage of a PPP project, where bidders may have an opportunity to suggest changes to the PPP contract (and the underlying risk allocation detailed in the PPP contract). Accordingly, the procurement process will serve to determine the final risk allocation and contractual rights and obligations of the parties throughout the lifespan of the PPP contract.

It is important to set the right minimum requirements and criteria when designing the tender process for the award of a PPP project. Choosing the right tender process and setting the right standards and criteria will define the quality of the competition. For example, if the Contracting Authority is concerned to ensure that the PPP project brings wider benefits to the local economy (such as using local businesses and employees and developing local skills and expertise), it may want to impose specific requirements.

Sharing reports from the feasibility stage with bidders can help to reduce bid costs and, consequently, the price bidders propose for the PPP project. To the extent any information from the feasibility stage is given to the Private Partner to rely upon (in terms of accuracy and sufficiency), the risk that such information is not accurate or sufficient will be borne by the Contracting Authority (as flagged in the relevant risk categories of the matrices in this guidance tool).

The choice of the right Private Partner is also of great importance and the Contracting Authority should ensure that it chooses the right partner. The relationship between the Contracting Authority and the Private Partner is key in a long-term PPP contract. In order to achieve this, the Contracting Authority will typically specify the technical and financial capabilities required of the key parties in each bid (i.e. the Private Partner and its proposed key subcontractors and investors) and evaluate their respective strengths as part of the procurement process. In some jurisdictions, the Private Partner may be required to provide certain additional performance security.

The World Bank's *Procuring Infrastructure Public-Private Partnerships Report 2018*[5] provides additional data and guidance on the procurement stage of a PPP project.

Construction, Operation and Handback

Because of their long-term and complex nature, PPP contracts cannot specifically provide for the entire range of events that might arise during their lifetime. As a result, PPP contracts typically have flexibility built in to enable changing circumstances to be dealt with as far as possible within an agreed contractual framework. All stakeholders in a PPP Project will need assurances that situations which are beyond their immediate control and which affect contractual performance will be dealt with in a way that allows them to arrive at a mutually acceptable solution. For this reason, both parties will typically want to place contractual restrictions on changes to the identity of the parties (and these contractual restrictions are addressed in the risk allocation matrices under the risk heading 'Counterparty risk').

2 Available at https://consultations.worldbank.org/consultation/guidance-ppp-contractual-provisions.

3 Available at https://www.eib.org/attachments/epec/epec_terminaison_and_force_majeure_en.pdf

4 https://www.eib.org/attachments/epec/epec_state_guarantees_in_ppps_en.pdf

5 https://ppp.worldbank.org/public-private-partnership/library/procuring-infrastructure-ppps-2018.

The GI Hub's *PPP Contract Management Tool*[6], which provides guidance for governments through the construction, operations and handback phases of PPP projects, highlights the importance of choosing the right Private Partner. It provides data and detailed case studies to guide governments in managing the day-to-day management of PPP contracts and situations where particular risks have materialised.

Additional Guidance Material

Several other reference documents are available to provide governments with guidance for the various stages in the development of a PPP project, including guidance materials produced by other multilateral development banks, other development finance institutions, the OECD, the European PPP Expertise Centre, the United Nations Economic Commission for Europe (UNECE), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and other entities. Many of these resources can be found on the GI Hub's *Infrastructure Knowledge Exchange*[7] and/or the World Bank's *PPP Knowledge Lab*[8].

Detailed Risk Identification and Analysis

As highlighted above, care must be exercised in adapting guidance to the specific characteristics of any given project. PPP project risks vary between projects and the individual characteristics of each project make it inherently problematic to suggest a 'one size fits all' risk matrix. The risk categories contained in the matrices in this guidance tool set out the key risks that are generally applicable to the sub-sector in question. There will, however, inevitably be more detailed risk identification required in individual projects, as well as additional risks to take into account in building a risk matrix which is specific to the project concerned.

From the Contracting Authority's perspective, it should make timely appointments of technical, legal and financial and insurance advisors experienced in PPPs and market practices in the relevant project sector. It is also important to involve internal and external stakeholders (including through public consultation) on a timely basis, so that all relevant risks can be identified. As identified in the GI Hub's *PPP Contract Management Tool*, it is beneficial to involve government officials who will be eventually managing the PPP contract during construction and operations. This will allow their experiences to be considered in the identification and analysis of risks during those phases. For example, the Contracting Authority will likely be responsible for signing off construction works, which may be complex and involve multiple assets. A lack of a full understanding of what is involved in the sign-off process can create risks of delay, so appropriate time needs to be provided for this in the PPP contract.

A typical risk analysis process will estimate the likelihood and potential impact of the eventuation of the identified risks. In this way, the Contracting Authority can make informed decisions on whether it is more efficient to retain a given risk or to transfer it to the Private Partner. It will also allow the Contracting Authority to fully consider its payment obligations, potential compensation liabilities and its contingent liabilities. There are several methods for considering the potential implications of risks eventuating, including qualitative and quantitative methods.

The risk matrices contained within this reference tool are not a "full" project risk matrices or risk registers as the Contracting Authority will need to consider not only the distinct risks, but also the probability of occurrence of individual (or concurrent occurrence of) risks, their impact, their valuation, their likelihood of occurring, etc.

This guidance tool does not go into detail on risk analysis other than to note its importance in informing the ultimate risk allocation structure used in a PPP contract.

For a summary of guidance on risk identification and the qualitative and quantitative methods for considering risks, see Section 3.3.1 (Identifying Risks) of the *Public-Private Partnership Reference Guide 3.0* that was developed by the World Bank and others[9].

Market Conditions

Risk allocation is influenced by various factors, including the maturity of markets, the experience of the participants and the level of competition between bidders. As a government delivers more PPP projects successfully, the risk perceived by private sector participants will reduce, making projects more attractive to investors, thereby creating a more competitive environment. In addition, because

6 https://managingppp.gihub.org/

7 https://www.gihub.org/infrastructure-knowledge-exchange/

8 https://pppknowledgelab.org/

9 Available at https://ppp.worldbank.org/public-private-partnership/library/ppp-reference-guide-3-0.

perceived risks change, the government may be in a position where it can begin to transfer more risk to the Private Partners as it develops a 'track record'.

A stable political, economic and legal regime and environment is desirable when seeking to successfully procure PPP projects. While certain associated risks can be managed under the PPP contract, ultimately the risk of investing in and lending to a PPP Project where these conditions do not exist may be too high for some private sector participants, particularly when compared with alternative investment or lending opportunities. Jurisdictions without a clear legal framework and solid institutional basis are perceived as likely to be more susceptible to inefficient and corrupt procurement which not only stalls the completion of infrastructure projects but also lowers the quality of infrastructure.

Depending on the Contracting Authority's credit rating and the level of government involvement, government guarantees or co-contracting may be sought by the private sector parties (e.g. if the relevant Contracting Authority is not a sovereign entity). The involvement of export credit agencies and multilateral and development finance institutions can also give investors greater confidence in bidding for and contracting a PPP in certain jurisdictions and act as a form of risk mitigant. This is due not only to their ability to offer more favourable financing terms or products such as political risk insurance in respect of commercial loans and equity contributions, but also because of the relationship dynamics at government level. Similarly, the existence of bilateral investment treaties between governments may play a part in the decision of a prospective private sector participant to invest in a particular jurisdiction. These elements are additional factors in the negotiation of a well-balanced PPP contract in such jurisdictions, but are not a substitute for appropriate contractual risk allocation in the PPP contract itself.

In addition, the level of development of a country's local capital markets, construction industry, government and private sector capacity, land rights or local courts will all have an impact on what makes for robust risk allocation in that country.

For these reasons, even within the same sector, the individual characteristics of each project make it inherently difficult to suggest a 'one size fits all' risk matrix. To begin to address market differences, the matrices contain market comparison summaries for Procuring Authorities to use as a starting point, but always recognising that there will be additional project-specific risks and issues to consider.

Accounting Treatment Distinctions

A factor that has affected government's interest in using PPP approaches to deliver infrastructure has been the availability of advantageous accounting treatments, in particular the perceived ability to treat such investments as 'off balance sheet'. However, this has attracted increasing scrutiny from accounting bodies around the globe due to concerns that governments may use PPPs to bypass spending controls (by taking public investment out of the budget and representing debt off the balance sheet), although they are still bearing substantial risk and incurring significant contingent liabilities.

This has resulted in bodies such as Eurostat, the International Monetary Fund and national accounting boards (e.g. in Australia) embarking on measures focusing on the overall risk/reward balance under PPP contracts for the purposes of determining whether they should be classified as on or off government balance sheets. For example, Eurostat in the EU currently requires EU governments to follow certain accounting rules for the debt and deficit treatment of PPP Projects (European System of National and Regional Accounts 2010 or ESA 2010). These focus on how construction risk, availability risk and demand risk are allocated between the Contracting Authority and the Private Partner to determine the accounting treatment that must be applied. Under these rules (which themselves have given rise to some debate), for a PPP to be recorded off government balance sheet, the majority of the risks and rewards under the PPP contract have to be borne by the Private Partner. A 'user pays' PPP contract will be off the government's balance sheet if government control over the Private Partner is deemed minimal and the risk and reward distribution is not distorted by other provisions, such as clauses on government financing, the existence of government guarantees, termination and the allocation of project assets at the end of the contract. "Government pay" PPPs may not be off balance sheet depending on the specific risk allocation between the parties.

This assessment of the overall risk/reward balance can play a role in deciding on an appropriate allocation of risks between the parties to a PPP contract where a government is looking for a specific accounting treatment. However, it is generally not considered good practice for accounting treatment to be a factor that should drive approaches to risk allocation in PPP contracts.

Additional guidance in respect of the management of the fiscal costs and risks associated with PPP projects is provided in the World Bank's *Public-Private Partnerships Fiscal Risk Assessment Model (PFRAM)* and Eurostat and EIB/EPEC's *Guide to the Statistical Treatment of PPPs*[10].

Legal System Distinctions

As noted above, the underlying legal system in each country may have an impact on risk allocation arrangements, and it will very likely have an impact on how contractual provisions are drafted. Two of the major legal systems globally are the civil law and common law systems. In addition, a number of PPP transactions are now being undertaken in countries with Islamic legal systems.

In civil law countries, PPP contracts are generally governed by administrative law which, besides giving jurisdiction to specific administrative courts, includes a number of fundamental principles which protect the public interest and which the parties cannot always alter by contract. These principles may include, for instance, the right of the Contracting Authority to unilaterally cancel or amend the contract in the public interest (with the Private Partner being entitled to compensation), or the right of the Private Partner to obtain compensation if there is an unexpected and exceptional increase in the costs of performing the contract due to unforeseen economic circumstances. Such codified provisions and underlying principles may be implied into civil law contracts without being expressly drafted into the PPP contract. As a result, less importance is generally placed on the PPP contract expressly setting out all the terms governing the parties' relationship and allocation of risks, partly because gaps or ambiguities can be remedied or resolved by operation of law. A civil law contract is, consequently, often less detailed than an equivalent common law contract.

Some civil law jurisdictions enjoy extensive freedom to contract, whereas in others it may not be possible to derogate from certain principles or to completely waive certain rights, so the parties will need to take this into account in their risk allocation negotiations. Generally, there is an increasing preference in civil law jurisdictions to expressly set out the legal position in PPP contracts so that they are clear on their face and are not relying on implied terms from underlying law. This is partly because this approach will be more familiar to parties from common law jurisdictions, but also because relying on underlying law may create more interpretation risk and it is in the interest of all parties to minimise the risk of ambiguity, particularly investors in a project financed structure, who require detailed security arrangements in exchange for providing their financial support.

In countries with a common law system, parties typically enjoy extensive freedom of contract and few provisions are implied into a contract by law. Judicial decisions set precedents which will be followed in the determination of contractual disputes and therefore influence contractual drafting. A consequence of this freedom is that the terms of any contractual arrangements should be expressly set out in the relevant contract. In a PPP context, all arrangements governing the relationship and allocation of risks between the parties therefore need to be expressly set out in the PPP contract itself.

In some countries with increasingly active PPP programmes, Islamic law (*shariah*) provides the substance of the legal system. These jurisdictions can be organised as common law or (more often) civil law systems. In these countries, no legal instrument—whether legislation, regulation, court ruling or private or public contract—may contravene Islamic principles. This means contracts that provide for forbidden interest (*riba*) or undue uncertainty/speculation (*gharar*) will not be enforceable in these countries. As a result, contractual structures—such as cost-plus financing (*murabaha*) or procurement-leasing (*istisna-ijara*)—have been adopted that, while compliant with the shariah, achieve the same commercial outcomes as their conventional counterparts.

An overarching consideration in relation to freedom to negotiate under all legal systems is whether the applicable procurement processes and rules limit the ability of the parties to negotiate and amend the terms of a PPP contract issued as part of a tender process, and whether any changes might give rise to procurement challenges or allegations of corruption. The Contracting Authority should take this into account when formulating the terms of the PPP contract, to ensure it retains the flexibility it is likely to require over such a long term and avoid tendering contractual arrangements which do not meet the test of bankability and which are not robust over the lifespan of the project.

10 https://library.pppknowledgelab.org/documents/2893?ref_site=kl&keys=PFRAM&restrict_pages=1&site_source%5B%5D=Knowledge%20Lab and https://ec.europa.eu/eurostat/web/government-finance-statistics/methodology/guidance-on-accounting-rules

APPENDIX A:

Glossary

Availability-based projects	Projects which entitle a Private Partner to receive regular payments from a public sector client to the extent that the project asset is available for use in accordance with contractually agreed service levels.
Agreed damages	A specified monetary amount paid for a specific contractual breach that aims to compensate the injured party for the loss it suffers for such breach. Such amounts are agreed up front and in many common law jurisdictions must be a genuine pre-estimate of loss to withstand challenges that such regimes are unenforceable. Depending on the underlying legal system and jurisdiction, such agreed damages may be referred to as liquidated damages or, frequently in civil law jurisdictions, penalties.
Cap and collar arrangement	An agreement not to go above (cap) or below (collar) certain amounts in relation to a particular requirement (e.g. subsidy levels in the case of a cap and collar subsidy arrangement). There are also variations of cap and collar arrangements, for example, if toll revenue for a road exceeds a given cap, the excess revenue will be shared between the parties.
Compensation events	Compensation events are typically events which (i) result in a delay to specified dates in the construction period (such as the operation commencement date) or adversely affect performance of the service in the operating period and/or result in cost increases beyond those in the financial model and (ii) which are at the Contracting Authority's risk as it is better placed than the Private Partner to bear and/or manage the risk. The compensation event regime enables the Private Partner to be given contractual relief through a corresponding extension of time (to the construction period or to the operating period) and/or through cost compensation, without having to resort to termination rights or other remedies. Cost compensation may be in the form of (subject to the applicable payment mechanism): an increase in the availability payment; a permitted increase in the user payments (subject to law and social and political ramifications); a reduction in fees paid by the Private Partner; or a lump sum payment by the Contracting Authority). The principle is to compensate the Private Partner so that it is put back into the position it would have been in had the compensation event not occurred. As this principle applies to a number of contractual risks for which the Contracting Authority is responsible (including certain changes in law and Contracting Authority failures), PPP contracts in mature markets often address the consequences of such events under the same compensation event provisions to ensure consistency. Other contracts may treat the consequences of some of these events separately, or as is the case in some emerging markets, under a provision addressing a broader range of material adverse government action (which, unlike the typical compensation event regime, may also lead to a Private Partner termination right). Contracts in some jurisdictions (e.g. civil law jurisdictions) may achieve a similar result by relying on underlying law. Categorisation will vary according to the particular project circumstances and jurisdiction and the experience and stability of the market.
Compulsory acquisition	The process whereby the Contracting Authority does not give the local land owners a choice to sell their land, but rather uses its legislative powers to compel them to sell for a predetermined price. Also known as eminent domain or more broadly as expropriation (though expropriation by definition may not involve compensation).
Construction phase	The period from when the Private Partner takes control of the project site (typically by reference to the date of signing or effective date (if conditional) of the contract or the commencement of construction by reference to certain works) until the operation commencement date.
Contracting Authority	The government or other public sector entity (either acting in its own capacity or acting on behalf of the state) which contracts with the Private Partner under the PPP contract.
Developed market (mature/more developed/politically stable)	A jurisdiction or sector that has experienced successful financial close and operation of PPP projects, typically with a stable economy and fair and predictable legislative system. A jurisdiction which is politically and legally stable may not be a developed market in PPP terms, and/or may only be a developed market in certain sectors or contexts, but an emerging market in others.

Emerging market (less mature/developed/ politically stable)	A jurisdiction or sector in which few PPP projects have been commenced, sometimes with a legal structure that can lead to a degree of unpredictability. A jurisdiction which is less politically and legally stable may not be an emerging market in PPP terms, and a jurisdiction may only be an emerging market in certain sectors or contexts, but a developed market in others.
Equator Principles	A risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects. It is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. These can be found at: http://www.equator-principles.com/
Equity	Monies used to finance a deal that are sourced from sponsors/shareholders (for example, raised through the issuing of shares in the Private Partner or its holding company), rather than though external debt (for example, from lenders).
Equity return	The amount of a company's net income return, typically as a percentage of the shareholders' equity.
Expropriation	Where the government takes privately owned property and declares it for public use. (See also Compulsory acquisition).
Finance documents	The key finance documentation for a project, which typically includes a loan facility agreement between the Private Partner and one or more lenders, an intercreditor agreement between the lenders, equity investors and Private Partner, direct agreement(s) with key subcontractors and security documents to secure the financing (e.g. by taking security over the asset in question or the rights in relation to the project as a whole, subject to local law and practice).
Force majeure	An event (or combination of events) typically outside the control of the contracting parties which prevents one or both parties from performing all or a material part of their contractual obligations. In some – typically civil law – jurisdictions, the definition may require the event to be unforeseeable or not reasonably avoidable. In PPP contracts, market practice is usually to define what qualifies as a force majeure event and its consequences, and the approach will depend on the relevant jurisdiction. In common law jurisdictions, the parties are typically free to agree whatever definition they choose. This is also the case in some civil law jurisdictions, although it may not be possible to derogate from the underlying law in others.
Government support	Where the government in the jurisdiction in which the project is based actively uses its powers to support the project and enable it to be financially viable/acceptable to lenders (e.g. by providing guarantees of the Contracting Authority's (payment) obligations or minimum revenue support if the Private Partner is bearing demand risk and/or implementing other fiscal measures designed to stabilise any jurisdictional uncertainties that make the project not bankable (e.g. foreign currency protections and tax breaks).
Grace period	The period after an obligation is due for performance during which such obligation may still be performed without declaring an event of default and/or termination.
Hardship doctrines	Hardship doctrines are typically civil law principles which provide the Private Partner with relief where unexpected circumstances make performance more onerous without being impossible. For example, administrative courts in France will enforce the doctrine of imprévision which allows a party to claim compensation through an increase in contract price where the contract circumstances have changed due to events which were unforeseeable, beyond the parties' control and have a fundamental impact on the economic balance of the contract. The circumstances are expected to be temporary and the contract may provide that imprévision can be invoked in accordance with case law or set out the financial threshold deemed to trigger the right to claim compensation (the Contracting Authority may also terminate the contract if the price increase is too significant or the situation is likely to last indefinitely).

Hedging	Hedging instruments are used to limit exposure to a price or unit of value that fluctuates. These typically cover interest rate, foreign currency exchange rates or commodity prices and/or inflation.
Hedge break costs	The costs associated with terminating any hedging arrangements prior to their natural expiry payable by one party to the other party (these may be either positive or negative for the Private Partner).
Key performance indicators (KPIs)	These measure performance of the project and are typically referenced to the output and performance specifications which the Private Partner is incentivised to perform. If the Private Partner falls short of the key performance indicators then, typically, payment mechanisms will apply, such as deductions made from the Private Partner's contractual payment entitlement or a penalty payable by the Private Partner. In the case of persistent or material circumstances a right of termination for the Contracting Authority may also arise.
Lenders/finance parties	The parties – typically international banks but also local banks and development finance institutions/multi-lateral agencies – which provide financing to the Private Partner for a project, taking an interest by way of security – often in the asset in question or the project as a whole (including by taking security over the shares in the Private Partner), subject to local law and practice.
Longstop date	A date which is tied to a prescribed time period after a scheduled date by which certain obligations must have been fulfilled. If the obligation is not performed by the longstop date, a right of termination will typically arise.
Operation commencement date	The date on which the operation of the project commences. This is, typically, once the construction phase of the project is successfully completed (usually determined by some form of independent certification and/or testing regime) and relevant commissioning has taken place successfully; the scheduled operation commencement date represents a target date, with failures to achieve that date having commercial consequences depending on the cause (see Works completions delays under Construction risk in the risk matrices).
Output specification	The Contracting Authority typically sets out a broad output driven technical specification in the tender documents and the contract, which requires the Private Partner to design and build the project in a way which satisfies the key performance indicators and ensures compliance with applicable legal requirements, good industry practice standards and, where applicable, minimum quality standards.
Performance specification	This sets out the levels (including quality) of performance at which the project must be operated throughout the life of the contract in fulfilling the output specification and typically includes key performance indicators.
PPP contract	The agreement between the Contracting Authority and the Private Partner outlining the scope and terms on which the project will be undertaken.
Private Partner	The entity from the private or commercial sector that contracts with the Contracting Authority to undertake the project. In a project finance context, the Private Partner will typically be established as a special purpose vehicle that is incorporated specifically and only for the purposes of undertaking the project and owned by the sponsors.
Public-private partnership	A long-term contract between a Contracting Authority, and a Private Partner for the development and/or management of a public asset or service, where the Private Partner bears significant risk and management responsibility throughout the life of the contract, and where remuneration is significantly linked to performance and/or the demand or use of the asset or service. It covers both greenfield and brownfield projects. This definition includes projects where demand risk is passed entirely on to the Private Partner (also known as 'user-pay' projects or concessions), and projects that are based on availability payments by government irrespective of demand (availability-based projects). It also includes, for example, power purchase agreements where a government entity is the purchaser of the power.

Relief Events	Relief events are typically events which adversely affect performance by the Private Partner of its obligations at any time (by causing delays or increased costs beyond those anticipated in the financial model), in respect of which it bears the financial risk in terms of increased costs and reduced revenue but for which it is given relief from termination for the relevant failure. This can include events outside the Private Partner's control, if it is in a better position than the Contracting Authority to mitigate and manage their consequences (e.g. through insurance and/or risk management). Relief events in mature markets typically include failures by utility providers, industrial action, power or fuel shortages, accidental loss or damage to the project and events such as fire, storms and floods, to the extent these are not categorised as other types of event, such as force majeure or compensation events. Contracts in some (e.g. civil) jurisdictions may achieve a similar result by relying on, or reflecting, underlying law. Categorisation will vary according to the particular project circumstances and jurisdiction and the experience and stability of the market (and, for example, risks which are relief events in mature markets may be treated as force majeure risk in less developed markets).
Senior debt	This is borrowing (typically from lenders) by the Private Partner to finance the project, repayment of which generally takes priority over any 'junior' debt or equity (and particularly in certain circumstances, such as the insolvency of the Private Partner).
Set-off	If one of the contracting parties owes monies to another contracting party, a right of set-off allows it to take account of amounts owed to it by the other party in calculating the amount it must pay.
Sponsor	This is an entity which is typically an initial developer of the project and an ultimate shareholder in the Private Partner. Sponsors typically include a member of each of the major project parties' corporate groups, such as the construction sub-contractor and operating sub-contractor and may also include pure financial investors or funds. Sponsors will limit their liability through the Private Partner but may need to give limited support or guarantees in respect of the Private Partner or the relevant sub-contractor.
Stabilisation	Contractual clauses that entrench certain legal provisions (such as the current tax regime) against any future changes in law, enabling foreign investors to protect themselves from such changes and a certain degree of political risk.
Tariff	The price set for the project output as between the Contracting Authority and the Private Partner, or as payable by third party users (for example, electricity in the context of a project in the energy sector), often fixed by reference to either a predetermined rate or agreed formula.

APPENDIX B:

Water Desalination PPP Risk Allocation Matrix

PPP RISK ALLOCATION MATRIX: WATER DESALINATION

PURPOSE OF MATRIX	**This appendix contains a matrix of risks typically found in a water desalination PPP transaction, together with guidance on how those risks are typically allocated between the government Contracting Authority and the Private Partner, the rationale for such risk allocation, mitigation measures and possible government support arrangements. It aims to provide governments (and, additionally, private sector stakeholders) with targeted guidance on the appropriate allocation of project risks in a PPP contract.**
CAUTIONARY NOTE	**This matrix contains an indicative – but not exhaustive – list of the main risks typically to be considered in water desalination PPP projects and their typical allocation between the Contracting Authority and the Private Partner. It may be used as a starting point for understanding the risk allocation issues commonly arising in water desalination projects and for developing an individual risk matrix for the project in question. A project's individual circumstances and its jurisdiction will influence the appropriate contractual risk allocation and there may be additional risks that need to be considered.** See *Detailed Risk Identification and Analysis in the Introduction*.

TYPE OF PROJECT AND SCOPE CONSIDERATIONS	This matrix addresses the common risks for the build, own, finance, operate, maintenance and transfer to the Contracting Authority (at the end of the PPP contract) of a new PPP water desalination project where the potable water is sold to a state-owned single buyer. Project scope may include associated infrastructure, such as water pipelines and, if necessary, electricity transmission or generation facilities.
ASSUMPTIONS	The Private Partner finances the development of the new water desalination project and only starts to receive payment from the Contracting Authority (and/or where applicable, users) once the water desalination project is in operation. Risk in relation to demand for potable water is taken by the Contracting Authority. Site selection is determined by the Contracting Authority, the potable water produced from the project is sold to the Contracting Authority (generally a state-owned single buyer) and the project will connect to the existing water grid which the Contracting Authority owns (or will own to the extent the Private Partner is required to build infrastructure that is to be transferred to the Contracting Authority once completed).
MARKET APPROACHES	The structure outlined in this matrix is a common approach for water desalination projects, although there are other contractual structures and procurement models that Contracting Authorities can use to deliver water desalination infrastructure, such as more traditional procurement of certain required construction or operational elements of a water desalination project. The risks addressed in this matrix and much of the risk allocation guidance will be relevant to different contractual structures and procurement models, but will need to be adapted appropriately taking into account the scope and duration of the relevant contract and financing methods (such as whether there is a need for long term third party lending and how the pricing mechanism works).
PROJECT REVENUES AND PAYMENT MECHANISMS	Project revenues are typically generated through the Private Partner receiving (a) availability payments from the Contracting Authority (which will cover the Private Party's finance costs, fixed operating and maintenance costs and return, and will be paid to the Private Partner to extent the desalination project is available, irrespective of how much it is actually dispatched) and (b) production payments from the Contracting Authority based on the actual quantity of potable water produced and delivered to the Contracting Authority (which are structured to compensate the Private Partner for its variable operating and maintenance costs).
KEY RISKS	**Environmental and social risk:** The Private Partner will bear the risk of obtaining and complying with environmental consents, but there will be an element of shared risk in relation to changes in approach from permitting authorities and external environmental events. Desalination projects are particularly sensitive to external marine environmental events, such as jellyfish or algae blooms, or pollution spills, the risk for which is in principle shared to the extent it goes beyond that which could reasonably have been provided against/ is reasonably capable of mitigation through design. If an impact cannot be mitigated by design (e.g. because it is a necessary consequence of the selection of the project site by the Contracting Authority) then this would in principle be borne by the Contracting Authority. Lenders/other funding institutions involved (such as development finance institutions) are unlikely to allow a project to reach financial close if there are any significant adverse impacts on the environment or the local community. *See External environmental events under Environmental risk and Social risk.* **Power supply:** Desalination requires a significant amount of power, and the Contracting Authority is typically responsible for providing the required power (and bearing the risk of any increase in power prices) unless the project is developed as a combined power and water project. In emerging markets or markets where the electricity grid is not sufficiently robust, this places a significant amount of risk on the Contracting Authority. *See Operational resources or input risk in Operating risk.* **Reliance on key membrane supply sub-contract if using reverse osmosis technology:** Reverse osmosis (or "RO") technology requires membranes which need to be replaced on a comparatively regular basis during the life of the project. Membrane supply is comparatively specialised and this can leave the Private Partner/the project exposed should the chosen membrane supplier fail to perform or cease to exist. *See Operational resources or input risk in Operating risk*.
OTHER CONSIDERATIONS	**Technology choice:** The two main technologies for desalination are reverse osmosis or distillation (of which the main sub-technologies are multiple stage flash distillation and multiple effect distillation). Technology is usually specified by the Contracting Authority but the choice of technology does impact on the cost and technological risks for the project. For example, although reverse osmosis technology is more energy efficient, it is more susceptible to seawater quality including blooms of algae such as red tide and may be reliant on specific suppliers to provide membranes (which need to be replaced periodically throughout operation). **Combined power and water**: Desalination is a power-intensive process and, without a dedicated power source, is dependent on sufficient electricity being provided by the Contracting

	Authority. To avoid risk associated with this, Contracting Authorities sometimes combine desalination projects with power projects, with the Private Party then responsible for managing the internal load required for the desalination process. **Staged operation commencement:** Although a single operation commencement regime is more common, the Contracting Authority may wish to implement a multi-staged operation commencement process enabling the Private Partner to begin to receive payment once significant components of the project are substantially completed (e.g. one of several distillation boilers or significant parts of the reverse osmosis system). This can help increase cash flow during the overall construction process, reduce the Private Partner's financing costs and incentivise the phasing of construction works in order to ensure critical components are completed on time. On the other hand, staged completion dates may also increase the complexity of the construction programme, limit the Private Partner's ability to mitigate construction delays and/or have agreed damages attached to them, which can increase the risk to the Private Partner and increase the risk of claims for extensions of time/prolongation costs. This is likely only to be suitable where distinct sections of the water desalination project can become operational in phases and where commencement of operation will not distract from ongoing construction requirements.
PRIVATE SECTOR RISK MITIGATION	**Allocation of risks to sub-contractors:** See *Risk Allocation in PPP contracts in the Introduction* and *Cost overruns and Works completion delays under Construction risk*. As regards construction, the Private Partner will often enter into a lump sum construction contract with a construction sub-contractor to pass down its obligations under the PPP contract and to manage the risk of cost overruns and delays (subject to certain relief to which the sub-contractor will be entitled under the sub-contract). The Private Partner will bear the risk of liability caps agreed under the sub-contract being reached or warranty periods under the sub-contract being shorter than the Private Partner's defect rectification obligations towards the Contracting Authority. As regards operation, the Private Partner will similarly typically enter into an agreed price operating sub-contract with an operating sub-contractor to pass down its operating phase obligations to the extent practicable. The operating sub-contractor may not be willing to wrap the risk of membrane supply (due to the specialised nature of this supply) (s*ee Operational resources or input risk under Operating risk*), meaning that the Private Partner will likely need to procure these under a separate supply contract (with provision of membranes then being the Private Partner's risk should the chosen membrane supplier fail to perform or cease to exist). In addition, although there may be agreed damages and/or incentive regimes under either or both of the operating sub-contract or the membrane supply contract, the comparatively small value of these contracts means that any payments to the Private Partner of such agreed damages and/or incentive payments is unlikely to fully compensate the Private Partner for any significant loss of revenue. The Private Partner may require sub-contractors to provide performance security (e.g. bonds, parent company guarantees and/or letters of credit) against non-performance of the sub-contract by the sub-contractor. **Insurance:** See *Risk Allocation in PPP contracts in the Introduction.* **Effective implementation of social and environmental management plan:** See *Environmental risk and Social risk*. **Additional equity and other funding support:** See *Market Conditions in the Introduction*.
PUBLIC SECTOR RISK MITIGATION	**Carrying out detailed feasibility and ground surveys:** See *PPP Project Preparation and Delivery in the Introduction*. In addition, studies for water desalination projects should include identification and suitability of site, additional land needs (e.g. laydown), interface with existing and future water desalination projects and/or local water grids (and corresponding impact on the project), and social and environmental impact of both the construction and operation of the water desalination project, in particular in relation to water intake and brine containment/disposal and impacts on marine life. Detailed ground surveys should also be carried out where practicable. Where such information is provided to bidders to rely on in pricing their bids, Contracting Authorities may elect to guarantee accuracy but not necessarily completeness or interpretation – this will depend on project-specific factors including the experience of the bidders and the ability to obtain other relevant information.
	Running an efficient and fair procurement process: See *PPP Project Preparation and Delivery in the Introduction.* Enacting enabling legislation and complying with domestic procurement laws in relation to the project are primarily the Contracting Authority's risk and responsibility. As the Private Partner will be affected by the consequences of breach of such legislation, it will carry out due diligence itself on these matters. Interference with the tender process and other issues attributable to the Private Partner will remain a Private Partner risk.
	Timely consultation on social and environmental impact: It is key for the Contracting Authority to consider the effect of the project on people, wildlife and habitat and to implement effective management of stakeholder interests and public perception before and (in conjunction with the Private Partner) during the project. See *Environmental risk and Social risk.*
	Having competent advisers: See *Detailed Risk Identification and Analysis in the Introduction*.
	Timely involvement of internal stakeholders and contract management team: See *Detailed Risk Identification and Analysis in the Introduction*.
	Careful assessment and quantification of risk: See *Detailed Risk Identification and Analysis in the Introduction.*
	Taking performance security: The Contracting Authority may seek certain security direct from the Private Partner and its sub-contractors, or their parent companies, in respect of certain contractual (or tender) obligations. This may be in the form of bid bonds during the tender stage and, following the tender stage, completion bonds, performance bonds and guarantees. As an alternative, cash reserving mechanisms could be used during the life of the contract. Although the Contracting Authority may be able to call on this security in certain circumstances (such as performance failures by the Private Partner), the security will have a cost attached. This will feed through to pricing and may affect value for money, particularly since the security may never be called.
PUBLIC SECTOR SUPPORT MEASURES	Where the Contracting Authority's own credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in projects where the Contracting Authority is not part of central government or it is a local authority. To mitigate this Contracting Authority counterparty risk, a sovereign or central government (e.g. finance ministry) guarantee (or equivalent support) may be needed, though the full implication for the public sector should be carefully assessed, including the potential impact on the government's contingent liabilities and fiscal sustainability. *See Demand risk, Project Revenues, Including Payment Mechanisms above and Strength of Contracting Authority payment covenant under Early termination risk*.

KEY TO MATRIX

Risk category rows		Broadly, the first row of a particular risk category summarises the risk and its main allocation. The subsequent rows detail specific issues relevant to that risk and its allocation.
Risk allocation symbols	●	Indicates how the main risk described in the relevant row is typically allocated.
	[●]	Indicates how the risk (or part of the risk) may be allocated differently in the particular additional circumstances described.
Defined terms		Certain terms used in the matrix are defined in the Glossary. For example, the terms compensation event and relief event are used throughout this matrix with respect to how a PPP contract addresses the eventuation of certain risks. For a detailed explanation of those contractual mechanisms, refer to the definition of compensation event and relief event in the Glossary.

SUMMARY MATRIX[1]

RISK CATEGORY	DESCRIPTION	BASIC RISK ALLOCATION		
		Public	Shared	Private
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.	●		
SOCIAL RISK	The risk associated with the project impact on the marine environment, adjacent properties and affected people (including public protest and unrest); resettlement; indigenous land rights; and industrial action.	●	●	
ENVIRONMENTAL RISK	The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; climate change; and marine environment events (e.g. algae blooms).		●	●
DESIGN RISK	The risk that the project design is not suitable for the purpose required; approval of design; and changes.			●
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; and industrial action.			●
VARIATIONS RISK	The risk of changes requested by either party to the service which affect construction or operation.		●	
OPERATING RISK	The risk of events affecting performance or increasing costs beyond modelled costs; performance standards and price; availability of resources (other than power, where not combined power and desalination); intellectual property rights compliance; health and safety; compliance with maintenance standards; and industrial action.		[●]	●
DEMAND RISK	The risk that demand for potable water is not sufficient to utilise the full production capacity of the project.	●		
FINANCIAL MARKETS RISK	The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.		●	
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.		●	
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.		●	
FORCE MAJEURE RISK	The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.		●	
MAGA RISK	The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.	●		
CHANGE IN LAW RISK	The risk of changes in law affecting performance of the project or the Private Partner's costs.	●		
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.		●	
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.			●

[1] Cautionary note: The summary matrix identifies typical risk allocation on an aggregated basis. For each risk allocation, however, there are generally exceptions. For the full discussion on typical risk allocation arrangements, please see the detailed guidance provided in the matrix below.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Provision of required land – general**	●	[●]		The Contracting Authority typically bears the risk of selecting the site and acquiring the required land interests for the project, whether through compulsory acquisition/expropriation or other powers, because it has powers to do so which the Private Partner does not. It is also in the Contracting Authority's interest because on expiry of the contract the asset will typically revert to public ownership and operation (and/or the contract will be subsequently re-tendered). The Contracting Authority is generally responsible for providing a "clean" accessible site, with no restrictive land title issues. During the feasibility stage (see *PPP Project Preparation and Delivery in the Introduction*), the Contracting Authority should undertake detailed assessments as regards ownership of the relevant land and ensure that it has a complete understanding of the risks involved in acquiring the site and those that will affect the construction and operation of the water desalination project. In addition, studies for water desalination projects should include suitability of site, additional land needs (e.g. laydown), interface with existing and future water desalination projects and/or local water grids (and corresponding impact on the project), and social and environmental impact of both the construction and operation of the water desalination project, in particular in relation to water intake and brine containment/disposal and impacts on marine life. Such information should be disclosed to bidders as part of the bidding process. This includes consideration of matters such as rights of way, covenants affecting use or disposal and historic encroachment issues that may encumber the land, as well as how the Contracting Authority is addressing such issues and the extent to which bidders are required to price certain risks. To the extent the Private Partner has relied on information provided and priced any such risks, it will share in those risks provided that the information relied on was accurate. Some Contracting Authorities will guarantee only correctness of data provided, not completeness or interpretation Land arrangements will need to extend beyond the central project site as required for water pipelines, electricity cables and other utilities to the extent the existing grids do not already have connection points proximate to the site. Some responsibility for these may sit with the Private Partner if they are dependent on project design. If the Contracting Authority needs to use its legislative powers to acquire the site (e.g. through compulsory acquisition/expropriation), this may increase social risk and other opposition to the project (e.g. due to delay caused by court cases). *See also Social risk.*.	In certain markets, land rights (in particular reliable utilities records, and land charges and third party rights to (access) land) may be less clear than in other markets where established land registries and utility records exist and risks can be mitigated with appropriate due diligence. Where reliable information is not available, this will increase the risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risk as the Private Partner will not be able to bear them. The rights of private landowners against compulsory acquisition/expropriation might be stronger in developed markets, so the Contracting Authority may need to allow more time to acquire the land. In emerging markets, if, as is sometimes the case, the land for the project does not have any title deeds, the Contracting Authority will be required to arrange for a contractual licence to use the land. The Private Partner and their lenders are generally comfortable with these arrangements, although such an interest will not be registrable.
	Timing of provision of required land	●			**Acquisition pre-signature:** The Contracting Authority should complete the process of land acquisition before the contract is awarded so that all issues and risks are known and managed. All relevant processes will need to be carried out in a timely manner. The timeframe will depend on the issues affecting the site and the applicable processes. The risk that all necessary processes have been satisfied will be the Contracting Authority's risk.	
		●			**Acquisition post-signature:** If the Contracting Authority is not able to provide the land by contract award, it will bear the risk of providing it in accordance with a contractually agreed programme. Failure to obtain the land by a certain date may entitle the Private Partner to terminate the contract *(see also MAGA risk)*. If the risk of non-availability is too great, this may deter some investors and financiers from engaging in or continuing in the bid process.	
	Provision of temporary additional land	●		[●]	**Identification pre-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during construction) are identified in the procurement phase and are common to all bidders, then the associated risk is usually treated in the same way as the original land. Usually the Contracting Authority will bear the risk of acquiring/providing such land, unless the need for such land is specific to a bidder (for example, due to its construction methods and equipment) – in which case the risk should be	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					allocated to that bidder and the cost factored into its bid price. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
				●	**Identification post-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during construction) are identified, they should be a Private Partner risk as such need should have been identified and factored into the Private Partner's bid. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
	Heritage / indigenous land rights	●		[●]	Land rights issues involving indigenous groups will be the responsibility of the Contracting Authority. The Private Partner will bear the risk of complying with legislation and contractual obligations imposed on it in this regard. The Private Partner's obligations with regard to indigenous rights is well legislated for in some markets. In the absence of legislation, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project (e.g. compatible with the Equator Principles). This will be particularly relevant if international financing options are desirable. *See also Social risk.*	This issue is coming under increasing focus from multilateral agencies and other finance parties, as well as civil society and human rights organisations. For example, the World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects it is to finance. Many finance parties (including commercial finance parties) adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). Examples of specific legislation are native title legislation in Australia and the equivalent First Nations law in Canada. These include a requirement to seek consent from the indigenous parties affected and to enter into indigenous land use agreements.
	Resettlement				*See Resettlement under Social risk.*	
	Suitability of land		●		**General:** The risk that the land is not suitable may be shared as the Contracting Authority may be able to secure the availability of the site, but the suitability of the site may be dependent on the Private Partner's design and construction plan. Studies for water desalination projects should include environmental impact of both the construction and operation of the water desalination project, in particular in relation to water intake and brine containment/disposal and impacts on marine life. *See also Environmental risk and Design risk.*	
		●		[●]	**Underground:** Risk with regard to stability and suitability of the underground conditions sits with the Contracting Authority if no or unreliable data is available and the risk cannot be transferred (or transferring the risk does not represent value for money). To the extent reliable data is available in the tender phase and can be relied upon by the Private Partner, the risk sits with the Private Partner. *See also Site condition under Land availability, access and site risk.*	
	Key planning consents	●			**Pre-signature:** In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents, although it is possible that some planning consents may remain to be obtained by the Private Party following signature.	In some jurisdictions, it may not be possible to obtain the requisite planning consents until such time as the Private Partner has been identified and/or detailed design is known.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
		●		[●]	**Post-signature:** If consents for key permits are not obtained before contract signature and the Contracting Authority wants to sign the contract, it will typically bear the risk of the consents being delayed or not obtained (subject to the Private Partner complying with any reasonable requirements) – this may be treated as a compensation event. Failure by the Contracting Authority to obtain the consents by a certain date is likely to entitle the Private Partner to terminate the contract. Permit risk may be complicated further if there are different levels of authorities involved, and interaction between levels of design and authorisations may impact the timeline. If the risk of non-availability is too great, this may deter some investors and financiers from engaging in or continuing in the bid process. *See also MAGA risk., Design risk and Environmental risk.*	
	Subsequent planning approvals	[●]		●	Obtaining subsequent detailed planning consent and other approvals will be a Private Partner risk. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also Environmental risk and MAGA risk.*	
	Access to the site and associated infrastructure	●			**Construction phase:** In principle the Contracting Authority will be responsible for ensuring the Private Partner can access the site during construction. This will depend on the nature of the access required. Failure to provide access may be treated as a compensation event. *See also MAGA risk.*	Third party rights to (access) land may not be easily identifiable in some jurisdictions, increasing risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risks.
		●			**Operation phase:** Access to the water grid will be the Contracting Authority's risk during the operations phase. The Private Party will be responsible for delivering potable water to the contractual delivery point (which is likely to be at the site boundary) and its responsibility ceases at that point. If there are issues with the wider water grid meaning that the project's production cannot be transported from the delivery point, the project would continue to be paid availability payments and would just not be required to deliver potable water to the Contracting Authority. *See also Project Revenues And Payment Mechanisms.*	
	Site security	●		●	**Construction phase/operation phase:** Risk allocation with respect to site security will depend on the political climate, opposition to the project, nature of the risk and the stage of the project. Parties should aim to have a complete understanding of the risks involved in physically securing the site and those that will affect the construction and operation of the water desalination project. Ordinarily the Private Partner will be responsible for day to day site security. However, the Contracting Authority may need to use statutory means to properly secure the site for the Private Partner (such as police involvement or eviction) and in some circumstances may be required to provide additional site security / assistance during operations to manage this risk. Failure may be treated as a compensation or MAGA event. *See also Force majeure risk, MAGA risk, Social risk and Vandalism under Construction risk and Operating risk.*	For example, where there is public opposition to the water desalination project, there may be protestor action, or there may be issues safeguarding the equipment and installation.
	Utilities and installations	[●]		●	**Costs or delays caused by relocation/diversion of utilities at the site:** To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of any costs or delays caused by statutory undertakers and utility providers in carrying out work on existing utilities that cross or impinge upon the project site and need to be diverted or relocated prior to implementation of the project. Costs and delays caused by re-location or diversion of existing utilities for the purposes of the project which are due to the Private Partner's design or construction plan are usually allocated to the Private Partner. For connections to existing infrastructure (such as the water grid), *see Access to the site and associated infrastructure above and Project management and interface with other works/facilities under Construction risk.* The Contracting Authority will bear risk if no reliable information is available. It will also bear risk to the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate.	In some markets or challenging locations, there may be little data on location of utilities (water, sewage, oil, gas, optical fibre etc) and the Private Partner may be unable to accept all or part of this risk. In markets where the utility provider is a private entity, this

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Lack of data on existing utilities location can make it difficult for the Private Partner to assess (and price) the cost and time needed for relocation or diversion which can impact on the construction timetable and ultimately on meeting the operation commencement date. If the Private Partner bears this risk, the Contracting Authority may need to share the risk by capping the Private Partner's liability or by having a cost sharing mechanism. Where existing utilities will remain in place at or in the vicinity of the site, the Private Party may be required (or wish) to enter into crossing agreements or proximity agreements with the owners of the relevant utilities.	risk is likely to be treated as a relief event (and the utility company will bear the risk) – this is common in mature markets. In less mature markets, particularly where the utility provider is a state-owned entity, the risk is likely to be allocated to the Contracting Authority as a compensation or MAGA event.
		[●]	●		**Costs or delays caused by utility provider:** Costs and delays caused by a utility provider could arise in both phases and the risk will be allocated according to the relevant circumstances and market and ownership of the utility. The risk could be shared or allocated to the Contracting Authority.	
	Site condition	[●]		●	**Surveyed:** The Contracting Authority usually undertakes detailed geotechnical and ground/soil surveys during the feasibility stage (if not already publicly available) and discloses such information as part of the bidding process. Sharing the surveys will save bidders' costs (all which would otherwise feed through to the Contacting Authority in the contract price). To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of such conditions causing cost and delay. The Contracting Authority will bear risk to the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation of the data.	In a mature market, the Contracting Authority normally hands over the site to the Private Partner in an "as-is" condition on the basis of the surveys provided. The Private Partner can rely on the surveys but otherwise bears the risk. In some markets, the bidders carry out the surveys during the tender process – this may be the best solution in some circumstances, but may also limit competition unless bidders are compensated for these costs.
		●	[●]		**Unsurveyed:** Where it is not possible to fully survey site condition prior to award, the risk for unsurveyable land will be allocated to the Contracting Authority (e.g. as a compensation event). The risk may be shared by the Private Partner (e.g. as a relief event) in some circumstances, for example where the risks were within the knowledge of the Private Partner when it priced its bid or an experienced contractor would have considered ther existence as being possible. As water desalination projects are likely to be located in industrial/sparsely populated areas, this risk should be unlikely to arise.	
		●	[●]		**Cultural / Archaeological finds:** Discovery of artefacts can cause delays and costs as there may be legal or other requirements in relation to reporting them and permitting archaeological study. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk. One approach is to share the risk such that the Private Partner bears the risk in respect of designated areas (such as a low risk area) and the Contracting Authority bears the risk outside such areas (such as a high risk area). Another approach is for the Private Partner to be obliged to coordinate work, but for the Contracting Authority to appoint specialised contractors and to bear cost/delay and interface risk.	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of finds is often treated as a relief event.
		●	[●]		**Unexploded bombs, land mines and other munitions:** Discovery of munitions can cause delays and costs as they will need to be defused and removed. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk.	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of munitions risk is often treated as a relief event. In some countries, the risk of unexploded land mines can be high and specific surveying and cost provisions may need to be agreed.
		●		[●]	**Pre-existing environmental pollution:** Pre-existing pollution is typically the Contracting Authority's risk except to the extent it was known to and priced by the Private Partner. Remediation works for	

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					certain existing environmental conditions can be expensive so the ultimate risk allocation will depend on the project specifics and the surveys provided to the Private Partner. Environmental issues caused by existing assets which cannot be adequately catered for or priced (such as intake water contamination) may be retained by the Contracting Authority. *See also Environmental risk and Change in law risk.*	
	Existing asset condition	[●]		●	Where there are existing assets proposed to be used in the project, where practical they should be fully surveyed (and potentially warranted) by the Contracting Authority. To the extent reliable data relating to the condition of existing assets is shared by the Contracting Authority during the tender process and can be relied upon during implementation, the Private Partner can price the risk of using them, including the interface with other aspects of the project and latent defect risks. The Private Partner will then bear the corresponding risk. The Contracting Authority will bear risk to the extent such data proves inaccurate or insufficient, and to the extent of any warranties it provides. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation. If latent defects are discovered in assets which are due to be replaced at some point in the life of the contract, the Contracting Authority may be able to mitigate its risk to some extent by having a contractual mechanism which brings forward the replacement date. *See also Suitability of design under Design risk, Project management and interface with other works/facilities under Construction risk and Maintenance standards under Operating risk.* The Private Partner will have primary responsibility for managing the environmental and social strategy across the project, however environmental issues caused by existing assets which cannot be adequately catered for or priced (such as intake water contamination) may be retained by the Contracting Authority. *See also Environmental risk.*	
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.*	**Community and businesses**	●	●	[●]	Ultimately, the policy relating to the social impact of the provision of infrastructure is for the government. The Contracting Authority will bear this risk except to the extent the Private Partner is responsible for implementing any social management measures. During the feasibility stage, the Contracting Authority should have considered the impact on habitat, (social) infrastructure and communities generally, as well as on adjacent properties and industries – both in terms of the construction and operation of the water desalination project. It may need to carry out social impact studies and aim to minimise any negative impact of the project. Consultation may reduce the risk of opposition if outcomes are incorporated in the strategy and tender requirements. The approach, compensation schemes and what is acceptable should be addressed in the bid requirements and the contract. Investors and lenders may expect to see a plan addressing social impact, including the execution of any necessary contractual arrangements. The Contracting Authority may choose to adopt internationally recognised social and environmental standards and practices for the project to manage social risk, especially if international financing options are desirable. All the way through construction and operations, active stakeholder engagement by the Contracting Authority will be critical to avoid litigation, achieve key milestones on time and ensure it is delivering infrastructure that serves its public purpose. Both the Private Partner and the Contracting Authority should develop sound environmental and social risk management plans before construction begins. Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation (*see also Resettlement under Social risk*) and continued efforts to manage the social and political impact of the project on and around the site (possibly including a compensation regime for affected businesses adjacent to the water desalination project). The Private Partner will bear the risk of non-compliance with any contractual social risk obligations as	This issue is coming under increasing focus from multilateral agencies, development finance institutions and other international finance parties, as well as civil society and human rights organisations. Finance parties (including commercial finance parties) will look very closely at how these risks are managed at both private and public sector level. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). The World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects it is to finance. In civil law jurisdictions the obligation upon the Contracting Authority to act "in the general interest" and to justify and document decisions may strengthen the stakeholder process. This is because the level of transparency and justification required should ensure that stakeholder views are properly taken into account and the risk of arbitrary decisions (and consequent challenges) reduced.

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					well as social risk obligations set out in the underlying legal system, although even where social risk obligations are passed onto the Private Partner, the consequences of such risks occurring may come back to the Contracting Authority. For this reason, the Contracting Authority should critically analyse just what social risk obligations should be passed onto the Private Partner and what should be retained. Where there is public opposition, there may be protestor action in both construction and operating phases, and/or issues safeguarding the site equipment and installation. *See also Site security and Access to the site under Land availability, access and site risk, and Vandalism under Construction risk and Operating risk.* For a detailed analysis on how governments can better address aspects related to social inclusion in the delivery of infrastructure, see the GI Hub's practical guidance on *Inclusive Infrastructure and Social Equity*.	
	Resettlement	●		[●]	Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation. This may include the removal of formal and/or informal housing or businesses and resettlement of communities in another location, potentially also with compensation. The Private Partner is responsible for implementing any social risk management measures contractually agreed – these should be clearly specified by the Contracting Authority in the procurement phase to enable the Private Partner to price the cost and associated risks.	Resettlement of whole communities by the Contracting Authority is more likely in less developed markets where informal housing and businesses may be more prevalent. The affected parties may not have the means (or the transport) to relocate themselves, even if paid compensation, and whole communities may need to be moved together. In developed markets, affected parties may be more able to rely on rights under compulsory acquisition/expropriation laws and compensation received.
	Heritage / indigenous people	●		[●]	As with land use rights involving indigenous groups, any other social impact risks involving such groups will usually be the responsibility of the Contracting Authority but the Private Partner will bear the risk of complying with relevant legislation and contractual obligations. In the absence of legislation, indigenous rights issues and community engagement may be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project, particularly if international financing options are desirable. *See also Heritage/indigenous land rights under Land availability, access and site risk.*	The Private Partner's obligations with regards to indigenous rights is well legislated for in some markets and in other markets there may be more reliance on internationally recognised standards. *See also Heritage/indigenous land rights under Land availability, access and site risk.*
	Industrial action	●	●	●	The Private Partner assumes the risk of labour disputes and strike action adversely affecting the project except to the extent such action falls into the category of political risk – the Contracting Authority may bear the risk (if a MAGA event) or share the risk (as a force majeure or relief event) for strikes and other widespread events of labour unrest. For example, nationwide and sector strikes are usually Contracting Authority risks but strikes at the Private Partner's facilities will be a Private Partner risk. *See also Force majeure risk and MAGA risk.*	In less politically stable jurisdictions the Contracting Authority may have to accept more risk for strikes than in some jurisdictions. In markets where the risk of strikes is low, the Private Partner may be comfortable accepting this risk as a relief event.
ENVIRONMENTAL RISK *The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.*	**Pre-existing conditions**	●		[●]	*See Site condition and Existing asset condition under Land availability, access and site risk***.**	Environmental scrutiny is increasing around the world. The Contracting Authority and the Private Partner must develop sound environmental and social risk management plans before construction begins. The risk of delay in obtaining approvals may be greater in some jurisdictions, particularly where different levels of government are involved. Delays in obtaining environmental permits have caused significant construction delays in some sectors (for example, in some projects in South America) and the timeframe required should not be underestimated. If adequate relief is not given to the Private Partner, this may
	Obtaining environmental consents	[●]		●	**Pre-signature**: In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents. In many major projects, the environmental authorisations are a key component of the project and may take significant time to be prepared and approved. In some cases, these authorisations are initiated (such as preparing the environmental impact assessment) and prepared by the Contracting Authority ahead of the procurement process. At a specified point in time, the Private Partner will take over the risks related to obtaining detailed environmental licences or permits related to the project.	

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						deter the private sector from participating in new projects in the same sector or jurisdiction. International finance parties, multilateral agencies and development finance institutions are particularly sensitive about environmental and social risks. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (which are described in the Equator Principles). Finance parties will look very closely at how these risks are managed at both private and public sector level and this scrutiny is helpful to mitigate the risks posed by these issues. *See also Communities and businesses under Social risk.*
		[●]		●	**Post-signature**: Except as specifically identified otherwise, the Private Partner typically bears the risk of obtaining all environmental licences, detailed permits and environmental authorisations required for the project after contract signature. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event or MAGA event. *See also MAGA risk.* In some countries, there may be different levels of governmental approval required. Local authorities may interpret certain requirements in their own way after the contract price has been submitted and impose unexpected conditions on the Private Partner. This could adversely affect the project's financial model. The parties should ensure that the contract sets out clearly how any such interpretation or unexpected requirement is addressed to avoid disputes as to which party bears the consequences. *See also Key Planning Consents under Land availability, access and site risk, Change in law risk and Compliance with environmental consents and laws under Environmental risk.*	
	Compliance with environmental consents and laws			●	The Private Partner bears the risk of complying with all environmental licences, permits and environmental authorisations required for the project as well as applicable environmental laws. The parties should ensure that change in law provisions adequately address changes in (mandatory) environmental standards and laws to avoid disputes as to which party bears the consequences of any requirements imposed after contract signature. *See also Change in law risk.* In the absence of legislation, environmental obligations can be managed by the Contracting Authority through the adoption of internationally recognised standards and practices for the project, particularly if international financing options are desirable. *See also Communities and businesses under Social risk.*	
	Environmental conditions caused by the project			●	The Private Partner bears the risk of environmental events caused by the project to the extent due to its failure to comply with applicable licences, laws and contractual obligations. This includes conditions affecting both the project itself and third parties. The Contracting Authority may want to satisfy itself as to the overall robustness and suitability of environmental plans proposed by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project, but the Contracting Authority should not take on any risk in doing so.	
	External environmental events		●	[●]	**Outside both parties' responsibility:** The risk of environmental events external to the project occurring which adversely affect the project (or, as a result, third parties) should be treated according to the nature and cause. They may be a form of shared risk, such as a relief event or force majeure event. Natural marine environmental events, such as jellyfish or algae blooms can have significant impacts on desalination projects (e.g. blocking the seawater intake, clogging membranes or impacting water purity). Consideration should be given by the Private Partner in advance to potential design adaptations/mitigation strategies for projects in areas where these sorts of events are common and, to the extent the Private Partner should reasonably have designed to counter these events, or can reasonably mitigate their impacts, the risk should fall on the Private Partner. In principle the risk is shared to the extent it goes beyond that which could reasonably have been provided against/ is reasonably capable of mitigation. If an impact cannot be mitigated by design (e.g. because it is a necessary consequence of the selection of	

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					the project site by the Contracting Authority) then this would in principle be borne by the Contracting Authority.	
		●			**Within Contracting Authority's responsibility:** If environmental events are within the responsibility of the Contracting Authority or government they may be treated as a compensation event or MAGA event (e.g. where the government has failed to enforce environmental laws in respect of polluting shipping and the pollution damages or restricts the seawater intake or leads to legal action against the project by third parties). *See also MAGA risk and Climate change event under Environmental risk.*	
	Climate change event	[●]	●		Market practice is developing with greater focus on events caused by climate change and the Contracting Authority should consider the risk and impact of climate risk events on the infrastructure (both one-off external weather events and more gradual effects, such as rising sea levels or temperatures) and the extent to which these can be passed to the Private Partner/designed against. It may be appropriate to treat certain events as force majeure events if they occur beyond certain thresholds or are not reasonably capable of being provided against in advance (e.g. temperatures outside certain ranges). Design resilience is also an important mitigating factor, for example, for projects with seasonal weather such as monsoon or where earthquakes are common, but also to build a facility that can continue to function following reasonably foreseeable changes (e.g. a certain amount of sea level rise). An alternative may be to consider a separate contractual mechanism to address these type of risks over the long term life of the contract. As with other variations required by the Contracting Authority, any changes to the project scope to mitigate climate change effects are likely to need to be funded by the Contracting Authority where the Private Partner cannot foresee or reasonably provide against such developments and has no means of passing on the cost (and no other agreement as to cost sharing is in place). As it is likely to be more costly to retrofit measures, it is essential that the Contracting Authority consider this risk during the feasibility phase, and that both parties continue to consider this issue further during the tender process. *See also Force majeure risk and Operational risk.*	If clear requirements are not included, this may lead to different bidders taking this risk into account in different ways. To avoid speculation and disputes, post-contract award, these issues should be clearly set out in the tender documents and negotiated throughout the tender process.
DESIGN RISK *The risk that the project design is not suitable for the purpose required; approval of design; and changes.*	**Suitability of design**			●	Generally the Contracting Authority should aim to transfer design risk to the Private Partner but the extent to which this is possible will depend on how involved the Contracting Authority wants or needs to be in specifying design requirements in the tender documentation. Alternative approaches are described below. **Output specification:** Where possible, the Contracting Authority usually aims to set a broad output driven specification in the tender documents, requiring the Private Partner to design and build the project in a way which satisfies the performance specifications and ensures compliance with applicable legal requirements, good industry practice standards and, where applicable, minimum quality standards. This allows for private sector innovation and efficiency gains in the design. With this approach, the Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification. For desalination projects, the Contracting Authority may wish to specify whether it wants reverse osmosis or distillation technology to be used (e.g. if it already has a number of facilities using one technology and wishes to diversify). Whilst this may affect pricing, or the entities that bid for the project, if other specification factors remain broad it should not alter the principles described in this section. A design review process during the contract will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner, but care should be taken to ensure that the mutual review process does not reduce or limit the Private Partner's overall liability.	In more developed PPP markets, the Contracting Authority typically drafts a broad output specification, unless permit or other regulatory requirements oblige it to provide more detailed and descriptive specifications. Projects in some less established PPP markets may be particularly dependent on availability of reliable resources necessary for construction and operation, which has implications for the Private Partner's ability to meet the reliability requirements in the performance specification and take full design risk. The quality of the information provided by the Contracting Authority and the Private Partner's limited ability to verify such data can hinder the Private Partner's ability to unconditionally take full design risk in some markets. Attempts to transfer the risk in such circumstances may also lead the Private Partner to price in expensive risk premiums that do not represent value for money for the Contracting Authority.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
		[●]			In limiting how prescriptive it is in the performance specification, the Contracting Authority may wish to request a degree of cooperation and feedback during the bidding phase to ensure that the bidding consortia's expectations in terms of an appropriate risk allocation for design responsibility are taken into account when finalizing the performance specification. If the Contracting Authority provides bidders with a basic design, bidders will typically be responsible for any errors, if they assume this basic design in developing their detailed design. An alternative is to provide (more) detailed design, but to contractually oblige the bidders to comment on and subsequently accept the (amended) design. The Contracting Authority should bear the risk of technical information provided by it proving inaccurate to the extent the Private Partner was allowed to rely on it for design purposes (e.g. inaccurate seawater intake specifications (to the extent this is a shared facility) or site condition surveys). *See also Changes to design under Design risk.*	
		●			**Prescriptive specification:** A prescriptive specification can, where essential, ensure the Contracting Authority receives bids on a particular (and similar) basis. However, the disadvantage of this approach is that it will restrict private sector innovation and efficiency gains in the design and may not result in best value for money. The Contracting Authority may also retain some design risk in certain aspects of the facility or related works, if it is more prescriptive in the performance specification. For example, if the performance specification is too prescriptive (e.g. narrow or complex intake/outfall requirements that constrain the efficiency of the design), the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted and the Contracting Authority will to that extent share in the design risk. The prescriptiveness of the performance specification is likely to be dependent on the depth of the feasibility study. Some jurisdictions allow only limited room for individual design, since all key aspects and many details are already fixed in the official planning approval decision. If the Private Partner wants to deviate from these requirements it must conduct formal amendment procedures, which in practice have such process and risk impact that bidders are not willing to take the risk that comes with initiating such amendment procedures. *See also Changes to design under Design risk.*	
		[●]			**Existing infrastructure:** If the project is being integrated into existing infrastructure, the Private Partner's ability to warrant the fitness for purpose of its design solution must be considered – it may not be able to warrant defects in the existing infrastructure which may impact the project's performance and the Contracting Authority may have to bear this risk. The Contracting Authority will retain the design risk to the extent that the design is dependent on interconnections for which the Contracting Authority retains responsibility, such as the required output flow and pressure for the potable water delivery pipe. *See also Existing asset condition under Land availability, access and site risk, Project management and interface with other works/facilities under Construction risk and Maintenance standards under Operating risk.*	
	Approval of designs	[●]		●	The Private Partner will bear the risk of obtaining design approvals as it will have principal responsibility for preparing the detailed design and obtaining relevant approvals from the appropriate state authority or other body. However, if the Private Partner has complied with all relevant conditions and time frames, the Contracting Authority may share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also MAGA risk.* Where specific solutions or consultants are imposed by the Contracting Authority (e.g. architectural or technical), some risk may remain with the Contracting Authority.	
	Changes to design	●		●	The risk of changes to design after contract signature is allocated according to the reason for the change.	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					If the original design is deficient, this will be a Private Partner risk, subject to the aspects which are the Contracting Authority's risk (as outlined in *Approval of designs and Suitability of design under Design risk)*. If changes are required by the Contracting Authority, this would as a rule be a Contracting Authority risk (with the consequent time and cost implications borne by the Contracting Authority on the same principles as for compensation events). *See also Variations risk*. Requesting design changes or alternative or more detailed design development during the procurement stage will delay the procurement timetable and cause bidders to incur additional costs. The lack of certainty and potential cost may deter bidders and, depending on the change in requirements, may result in the procurement process needing to be re-run to comply with procurement laws or risk later challenge.	
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.*	**Cost overruns**	[●]	[●]	●	Cost overruns (i.e. costs exceeding the construction costs assumed in the project's financial model) can have a variety of causes, such as mistakes in construction cost estimates, increased cost of materials, actions (or inaction) of the Contracting Authority or government, variations, as well as delays in – or mitigating potential delays in – the construction programme. The Private Partner typically assumes the risk of cost overruns to the extent these are not caused by compensation events (such as in relation to unsurveyed site conditions) or MAGA events, and are not addressed through other bespoke provisions (e.g. Contracting Authority variations, Change in law or provisions specifically addressing exchange rate risk during construction – *see also Variations risk, Change in law risk and Exchange rate fluctuation risk under Financial markets risk)* or hardship doctrines *(see Glossary definition)* in underlying law. The Private Partner will mitigate these risks by passing them through as far as possible to its sub-contractors (for example, the construction sub-contractor). The Private Partner's financial model will typically include contingency pricing for cost overruns (as will the sub-contractor's assumptions). *See also Force majeure risk and MAGA risk.*	In certain markets, risk is considered manageable by the Private Partner through robust pass through of obligations to credible and experienced sub-contractors and by allowing appropriate timetable and budget contingency. The Private Partner can mitigate the risk of sub-contractor non-performance by obtaining appropriate security from the sub-contractors (for example, parent company guarantees and/or performance bonds). The Contracting Authority may sometimes seek additional security itself to ensure such costs can be met - see Taking performance security under Public Sector Risk Mitigation. Enforcement of construction budgets may be easier in markets where the Private Partner will typically have more experience and reliable access to resources.
	Works completion delays	[●]	[●]	●	Delays in delivering the infrastructure by the relevant works completion date can have a variety of causes, such as unavailability of construction materials, delays in shipping, variations and mistakes in programme scheduling, as well as weather events, civil unrest or industrial action and actions (or inaction) of the Contracting Authority or government. The Private Partner typically assumes the risk of delays to the extent they are not caused by relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or change in law). *See also Force majeure risk, MAGA risk, Variations risk and Change in law risk.* In most projects, the relevant date is the scheduled commercial operation date and to achieve that the works will need to be completed, tested and commissioned. Some projects may instead (or in addition) require separate works completion deadlines to be met. This may be the case in jurisdictions where specific acceptance processes are required by law for construction works under public contracts and/or for insurance purposes. The Contracting Authority may wish to implement a sectional completion process to enable the facility to commence the supply of potable water before the end of the construction period for the entire facility (e.g. where it is possible to construct one of several distillation boilers or significant parts of the reverse osmosis system early). This will also enable the Private Partner to begin receiving payment before the entire facility has been completed, which may help it to mitigate its exposure to delays that would otherwise impact the entire facility. This can help increase cash flow during construction, reduce the Private Partner's financing costs, reduce the Private Partner's contingencies for delay within construction costs and minimise risk of delays impacting the Contracting Authorities ability to satisfy water demand. On the other hand, sectional completion dates may also increase the complexity of the construction	Enforcement of construction deadlines may be easier in markets where the Private Partner will typically have more experience and reliable access to resources. If significant construction issues arise, the Contracting Authority will need to be prepared to enforce its rights to manage the consequences of a failure by the Private Partner to meet the construction milestones. In less mature markets, the management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached agreed damages for delay) followed by a fixed period for operation; or (ii) a scheduled construction period forming part of the overall contract term which is itself fixed, subject to extensions for certain events such as force majeure. With the latter scenario, the Contracting Authority may attempt to additionally impose agreed delay damages on the Private Partner. The difference between the two structures is that the former preserves the project's revenue generating operation phase and the Contracting Authority relies on the agreed delay damages to incentivise timely completion of the works and operation commencement. In the latter case, the incentive to complete the works and meet the scheduled operation commencement

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					programme, limit the Private Partner's ability to mitigate construction delays and/or have liquidated damages attached to them, which can increase the risk to the Private Partner and increase the risk of claims for extensions of time/prolongation costs. The Private Partner will be expected to demonstrate that the facility or section of the facility is substantially complete and meets the minimum performance levels before it is given permission to enter into commercial operation. Water desalination projects require detailed commissioning and testing regimes to ensure that the facility meets the output, water quality, efficiency and environmental requirements set by the minimum functional / performance specifications. The consequences for the Private Partner of delays to the relevant works completion date are loss of expected revenue due to arise on the relevant date, ongoing construction and financing costs and, in some cases, liability for agreed damages due to the Contracting Authority (see below). In extreme cases, there is also a risk of potential termination for failing to meet the "longstop date" (a final later date by which the Private Partner must complete the project works/commence operation to avoid the Contracting Authority being entitled to terminate). The Private Partner will pass through these risks as far as possible to its sub-contractors (and may require the sub-contractors to pay it agreed damages to (wholly or partly) compensate for the delay to and loss of its overall project income). The Contracting Authority may also consider imposing agreed ("liquidated") delay damages on the Private Partner to compensate it for delay to the start of the operating phase. However, imposing such liquidated damages will typically result in the Private Partner building additional contingency time and cost into the project's construction plan (which will also happen at the sub-contract level as the Private Partner will seek to flow these liquidated damages down to its supply chain) and the Private Partner should already be sufficiently incentivised to meet the relevant works completion date on time so that its revenue streams can commence. Some jurisdictions require certain criteria to be met in contractual provisions imposing delay damages if they are to be legally enforceable. Broadly speaking, if the damages exceed the Contracting Authority's likely real losses they may be seen instead as a disproportionate penalty and the provisions may be unenforceable.	date is that any delay at the Private Partner's risk will reduce the revenue-generating operating phase.
	Project management and interface with other works/facilities	[●]			**Project management:** Typically, the Private Partner assumes project management risk. **Interface with other works/facilities:** The Private Partner is typically best placed to deliver connection works to the local water grid at the delivery point. However, if some or all of the project is dependent either on the Contracting Authority carrying out particular works or making available an existing facility, or on related infrastructure work being completed by a third party, that interface risk will be the Contracting Authority's risk. If the operation commencement date is delayed due to such works not being carried out on time or the Contracting Authority otherwise failing to meet its obligations, this will be a compensation event or MAGA event. For example, the project may be relying on the Contracting Authority procuring the construction of an extension to the water grid to the delivery point at the facility or a new substation to supply electricity to the facility, the completion of which will need to be subject of a firm timetable with relief/compensation for delay/failure. *See also MAGA risk.* If additional interconnection facilities are required for the project (such as a new substation or extensions to the water grid), construction of these additional facilities may alternatively be included within the Private Partner's scope of responsibility, transferring the risk of delays and cost overruns in the construction to the Private Partner. Subject to the relevant regulatory framework, ownership and	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					responsibility for operation and maintenance of these facilities may be transferred to the Contracting Authority on completion of construction and commissioning, subject to the Private Partner's defect rectification obligations during the prescribed warranty period. Separate testing and taking over requirements are generally set out for connection facilities transferred to the Contracting Authority on completion.	
	Quality assurance and other construction regulatory standards	[●]		●	Meeting relevant quality standards will be a Private Partner risk, but where standards or codes are revised after the bid submission date this risk allocation will depend on whether the changes are mandatory and whether the Private Partner has priced the risk of such changes into its bid. The Contracting Authority may consider increasing the contract price to account for increased costs of compliance or the Private Partner may be excused from compliance with the new standard if it is not mandatory. This may be dealt with through the change in law provisions. *See also Change in law risk.*	
	Health and safety compliance			●	Responsibility for health and safety compliance on the construction site is typically a Private Partner responsibility. The Private Partner typically bears the risk of complying with health and safety laws/requirements and indemnifies the Contracting Authority in respect of any breach of such requirements. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority or other government entity and/or the affected party. Some projects require an annual safety review which enables the parties to assess relevant performance and safety management. Otherwise, the engagement of an experienced contractor with a strong safety record is also a mitigant.	In some jurisdictions with developed construction legislation, the Private Partner's responsibilities in the construction phase will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal obligations. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines.
	Liability for death, personal injury, property damage and third party liability			●	Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising due to the construction works . The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically the Contracting Authority will set certain minimum requirements under the PPP contract (*see also Unavailability of insurance under Financial markets risk*). The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third-party claims against it over this threshold.	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.
	Defects and defective materials			●	The Private Partner should be required to design and construct the project in accordance with good industry practice (which should ideally be defined in the PPP contract) and the other standards specified in the PPP contract, and bears the risk and responsibility for completing the project free of defects. Defects are typically categorised as (i) patent/visible and (ii) latent/hidden defects and are treated differently under the contract. The risk of patent/visible defects is sometimes covered by an interim acceptance at completion of the works but typically this is addressed by a defects rectification obligation over a defined period following a single full acceptance. As latent defects may not be noticeable for some years, the Contracting Authority will typically seek to have a longer period of protection for these from the Private Partner, however the definition of latent defects may mean that the extent of the protection provided by this regime is in practice limited. The Contracting Authority may request a performance bond from the Private Partner to support any defects rectification obligations (which the Private Partner will require from the relevant construction sub-contractor). The value of any such bond is typically significantly lower than required prior to completion. The Contracting Authority may retain latent defects risk in existing structures. *See also Existing asset*	The extent of latent defect protection expected from the Private Partner varies in different jurisdictions. In some jurisdictions there are also statutory defect rectification obligations that apply to certain works (commonly civil works) over prolonged periods (for example decennial liability in the Middle East).

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					condition under Land availability, access and site risk and Maintenance standards under Operating risk.	
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the construction and operation of the water desalination project and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue construction and/or operation/maintenance.	
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism				Vandalism is not typically a significant risk for desalination projects and therefore is not treated separately and just falls into the standard site security/property damage regime. *See also Site Security under Land availability, access and site risk and Social risk.*	
VARIATIONS RISK *The risk of changes requested by either party to the service which affect construction or operation.*		●	[●]	●	**Contracting Authority change:** The Contracting Authority typically bears the risk and cost of service changes implemented following its request. The contract will specify the extent to which it is entitled to require changes and the reasonable grounds on which the Private Partner may refuse. The Contracting Authority will also bear the risk of ensuring it can meet its cost liabilities. **Private Partner change:** The Private Partner will bear the risk and cost of service changes implemented following its request, unless the parties have agreed a sharing mechanic as part of their discussions of the change. A sharing mechanic may be appropriate where the Contracting Authority wants to incentivise the Private Partner to introduce innovative or environmentally-friendly solutions. If the Contracting Authority is liable for costs, it should mitigate its risk by requiring a transparent costing review process, which it can due diligence. This is likely to be particularly a concern during the construction phase. As with any potential liabilities under the PPP contract, the Contracting Authority will want to consider how best it can fund such payments (e.g. through financing the variation direct itself, requiring the Private Partners to procure committed but undrawn funding at financial close or to establish a reserve to fund future variations, each of which will come at a cost and may affect value for money, or requiring the Private Partner to procure financing at the time of implementation of the variation. Where financing is procured by the Private Partner, whether at financial close or at the time of implementation, the Private Partner's revenues will need to be adjusted to fund repayment of the financing. The risk and cost associated with changes arising due to other provisions will be addressed according to those provisions. *See also Changes to design under Design risk, Cost overruns and Works completion delays under Construction Risk, Increased operating costs and affected performance under Operating risk, Climate change event under Environmental risk, Disruptive technology risk and Change in law risk.*	Some jurisdictions have detailed change protocol templates to follow for variations to ensure that costing is fair and transparent. Due to the impact changes can have on construction or operation (e.g. in terms of timing, cost and delivery), there may be restrictions placed on the ability to request changes of certain types or in certain phases. The Contracting Authority's ability to meet any change costs will also be a concern, particularly where it has a weak credit, and may affect the ability of the Contracting Authority to require (as opposed to request) changes.
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*	**Increased operating costs and affected performance**	[●]	[●]	●	Increased costs and delays in the operating phase can have a variety of causes, ranging from mistakes in maintenance cost estimates/changes in consumables prices or variations to extreme weather events. Aside from adjustments for inflation, the Private Partner will assume the risk of events which inhibit performance and/or give rise to cost increases beyond modelled costs, to the extent these are not relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or changes in law) or hardship doctrines *(see Glossary definition)* in underlying law. Some operating cost increases may be passed through to the Contracting Authority through the operation of the production payments regime. In dedicated desalination projects with no captive power generation, power payments (if paid by the	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
standards; industrial action; and vandalism.					Private Partner at all rather than resolved internally by the Contracting Authority) and any increases in the power price, will be flowed through to the Contracting Authority as pass-through costs as part of the production payment. *See Operational Resources or Input risk, Variations risk, Change in law risk, Force majeure risk and MAGA risk.*	
	Performance/ price risk			●	The Private Partner bears the risk of making sure the guaranteed water capacity of the facility is available (whether or not dispatched) and meeting the output specification under the contract (such as water quality specifications) with regard to any potable water produced. Availability is assessed on the basis of declarations of available capacity from the Private Partner in accordance with rules governing such declarations under the PPP contract, and subject to verification/audit by the Contracting Authority. Performance monitoring also enables the Contracting Authority to monitor service levels generally and potentially to receive early warning of matters requiring improvement or remediation. The Private Partner's payments will be subject to abatement if the guaranteed capacity is not available and/or if the output performance standards are not met. Where certain availability criteria or performance indicators cannot be met due to actions (or inaction) by the Contracting Authority (or other government entities) or unforeseen circumstances, the Private Partner may be entitled to relief (e.g. if caused by a relief, force majeure, MAGA or compensation event). *See also Force majeure risk and MAGA risk.* The Contracting Authority is responsible for enforcing the performance regime and for ensuring that the performance specifications are attainable and properly tailored to what the Private Partner can deliver based on relevant market data and policy objectives. Performance based on reliability, demonstrated water capacity and water availability, can be measured against pre-determined schedules or standards The appropriateness of the metrics can be assessed by reference to standards of similar services provided by the Contracting Authority (or other government body), value for money, the nature of the project and the relevant markets.	In mature markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. For other markets, particularly in the case of market first projects, the preparation of attainable standards by the Contracting Authority is complicated by the lack of relevant market data. In less mature markets, the Private Partner may require the Contracting Authority to reduce the performance requirements during a settling in period and possibly readjust the performance metrics once the performance of the water desalination project has stabilised. This can mitigate the risk of long-term performance failure.
	Operational resources or input risk		●	●	The Private Partner bears, subject to what is said below in relation to power supply, the principal risk and responsibility of ensuring an uninterrupted supply of resources for the project (such as utilities, maintenance equipment and materials, and (for reverse osmosis projects) membranes) and to manage the costs of those resources. It will need to consider this when structuring its supply arrangements. Desalination is a power-intensive process, meaning that power supply is one of the critical (and most expensive) inputs for a desalination project. If the Contracting Authority procures a dedicated desalination project (i.e. without combined power) the Contracting Authority will be responsible for the supply of adequate power to the project and will bear the cost of that power. The simplest way to structure this is for the Contracting Authority to take an obligation under the PPP contract to supply power to the project at the Contracting Authority's cost, with a failure to comply entitling the Private Party to relief. The alternative structure is for the Private Partner to enter into a power supply contract with a separate power supplier (who in emerging markets, will usually be state-owned). The Private Partner will pay the supplier for power delivered, but the costs of power supply will be a pass-through cost under the PPP contract, meaning that the Contracting Authority will be required to pay the Private Partner whatever the Private Partner pays the supplier. The Private Partner would be entitled to relief under the PPP contract for any failure by the power supplier under its contract and vice versa to relief under the power supply contract for any failure by the Contracting Authority under the PPP contract. For example, the Private Partner should not be in default under the power supply contract for a failure to pay the power supplier	Certain markets are generally more susceptible to market volatility and major cost variations. Mature markets generally do not experience market volatility to the extent of less mature markets, and resource availability is less of a concern. However, energy costs may still vary significantly over the course of a project. Emerging market water desalination projects may be particularly dependent on power availability, which has implications for the Private Partner's ability to meet the Contracting Authority's anticipated availability and output requirements in order to meet its water supply obligations. In developed markets, the Contracting Authority generally bears primary responsibility in the event that intake water is contaminated. In emerging markets, if the Contracting Authority is responsible for providing seawater (or access to seawater), then it will generally bear primary responsibility if that intake water is contaminated. Conversely, if the Private Partner bears responsibility for procuring seawater, then it

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					where it has not been paid the Contracting Authority under the PPP contract. To avoid taking on the power supply and cost risk, the Contracting Authority can procure a combined power and desalination project, leaving the Private Partner then responsible for managing the internal load required for the desalination process (and produce any power output required under the PPP contract). This approach may not entirely remove input risk from the Contracting Authority if the procured power source requires fuel (e.g. gas), in which case similar principles may apply as to the supply of power. In some markets, there may be specific instances where the risk needs to be shared or taken by the Contracting Authority (e.g. in relation to reliance on local source materials) where resources may be affected by labour disputes, embargos, actions of other government entities, where seawater is provided by (or taken from an intake controlled by) the Contracting Authority or another government entity or other political risks. These may be treated as relief, force majeure, compensation or MAGA events. *See also Force majeure risk and MAGA risk.* Reverse osmosis plants also require a consistent supply of new membranes as a key input. Membrane supply is comparatively specialised and this can leave the Private Partner/the project exposed should the chosen membrane supplier fail to perform or cease to exist. To mitigate this risk, the Private Partner can seek to enter into long term supply arrangements at the project's outset, and keep a suitable stock of spare membranes at the project site to mitigate short term issues in supply. However, these measures are unlikely to be enough to mitigate the impact of a long term supply failure or the supplier ceasing to exist or produce membranes.	will generally bear primary responsibility if the intake water is contaminated.
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the construction and operation of the water desalination project and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue construction and/or operation/maintenance.	
	Health and safety compliance	[●]		●	The risk allocation for health and safety will, in part, depend upon operating responsibility for the asset. The Private Partner will typically bear this risk in respect of its operational responsibility, as well as in respect of maintenance/repair works and other health and safety aspects related to the services provided by the Private Partner during this phase. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority and/or a third party. To the extent that the Contracting Authority has operational control of the asset, the Contracting Authority would typically retain "day to day" operational health and safety responsibility.	In some jurisdictions with developed construction and working practices legislation, certain of the Private Partner's responsibilities will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal obligations, for example, in relation to maintenance work being carried out in the operating phase. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines..
	Liability for death, personal injury, property damage and third party liability	[●]		●	The risk allocation for these liabilities will depend upon operating responsibility for the asset. Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising due to any building issues/defects and on-going maintenance/repair services and any other services/responsibilities of the Private Partner. The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					the Contracting Authority will set certain minimum requirements under the PPP contract (*see also Unavailability of insurance under Financial markets risk*). The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third party claims against it over this threshold. *See Liability for death, personal injury, property damage and third party liability under Construction risk.*	
	Maintenance standards			●	The Private Partner will bear the principal risk of meeting the appropriate standards regarding maintenance as set out in the performance specification, so that the facility remains robust and is handed back in the expected condition on early termination or expiry of the agreement *(see also Condition at handback risk)*. This includes day-to-day routine maintenance as well as lifecycle maintenance and replacement of particular assets. Failure to maintain the assets in accordance with the performance specification may lead to payment deductions (or simply a reduction in capacity payments due to increased unavailability) and, where significant, breach of the PPP contract. The Contracting Authority (or other relevant government entity) will retain the maintenance risk associated with the infrastructure connecting with the facility, such as the water delivery pipe taking water from the facility's delivery point. In practice, estimating life cycle works may be challenging. It requires experience and, to the extent available, the Contracting Authority may be able to provide data on life cycle cost. As the standard for PPP is often set at a much higher level than for existing (non-PPP) projects, such data is likely to require a multiplier. Life cycle funding/reserving mechanisms may mitigate life cycle risk but are also difficult to design adequately and Contracting Authorities should bear in mind that these can have an impact on risk allocation/value for money. The involvement of the Private Partner in the operation and maintenance of the project, and the linking to payment entitlement, can provide several benefits. It should incentivise greater care and diligence by the Private Partner in both the construction and operating phase, and increase the useful life of the infrastructure. The Contracting Authority may establish a facilities management committee to oversee the Private Partner's performance of the operation and maintenance services, along with a formal mechanism to discuss and resolve performance related issues. Generally speaking, the Contracting Authority should avoid undue interference with the Private Partner's provision of operation and maintenance services so as not to dilute the risk transfer benefits.	
		[●] ●		●	**Existing assets in the project:** As regards any existing structures, the maintenance risk should be allocated to the Private Partner to the extent the condition of the existing assets is known and future maintenance work can be assessed properly by an experienced contractor. In some cases, the Contracting Authority may need to retain the maintenance or latent defect risk of some existing assets (and fit for purpose standards may need to be appropriately adjusted). **Existing (or other) assets interfacing with the project:** The Contracting Authority will bear risk if it is required to guarantee and proactively manage the maintenance of an existing (or other) water delivery pipe network that integrates with the project as this will be key to providing access to the new water desalination project. *See also Access to the site and associated infrastructure under Land availability, access and site risk.*	
	Interface				*See Access to the site and associated infrastructure under Land availability, access and site risk, Project management and interface with other works/facilities under Construction risk, Maintenance standards under Operating risk and Demand risk.*	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism				Vandalism is not typically a significant risk for desalination projects and therefore is not treated separately and just falls into the standard site security/property damage regime. *See also Site Security under Land availability, access and site risk and Social risk.*	
DEMAND RISK *The risk that demand for potable water is not sufficient to utilise the full production capacity of the project.*	**General principles**	●			Demand risk for potable water will be taken by the Contracting Authority. The Private Partner is compensated by the Contracting Authority through: • availability payments (which will cover the Private Party's finance costs, fixed operating and maintenance costs and return, and will be paid to the Private Partner to extent the desalination project is available, irrespective of how much it is actually dispatched); and • production payments based on the actual quantity of potable water produced and delivered (which are structured to compensate the Private Partner for its variable operating and maintenance costs). The intention of this structure is that the Private Partner should not be prejudiced if demand is lower than the Contracting Authority expected and the full production capacity of the facility is not required to be used. However, the Private Partner will not over-recover in respect of variable operating and maintenance costs as it will not be paid these where it is not producing and delivering potable water.	
FINANCIAL MARKETS RISK *The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.*	**Inflation**	[●]		●	**Construction phase:** The risk of construction costs increasing due to inflation is typically borne by the Private Partner who will generally price in this risk in markets where such risk can be projected and quantified. Where this is not possible the Contracting Authority is likely to be asked to bear some risk.	The fluctuation of inflationary costs is a greater risk in less mature markets than it is in other markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the contract term. The escalation factor is typically defined by the consumer price index in mature markets. In other markets, the selected indexation method will need to reflect variable financing costs and variable inputs such as staff and materials. It will be more crucial in less mature markets to find appropriate indicators which mirror the project needs rather than a general consumer price index.
		●			**Operation phase:** Inflation risk in the operating phase is typically borne by the Contracting Authority. The Private Partner will look to be kept neutral in respect of both international and local inflationary costs through an appropriate inflation uplift or tariff adjustment regime. There is always a time lag in how quickly the indexation price increase is available to the Private Partner. This is achieved by including an escalation factor in the variable production payment to account for rises in costs. The availability payment may also be subject to escalation where debt has not been hedged.	
	Exchange rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority may expect the Private Partner to bear the risk of an exchange rate fluctuation for a specific time period (e.g. 90 days) between submission of bid and financial close. Where there is a prolonged period between bid submission and financial close, the Contracting Authority may need to bear the risk. Where exchange rates are volatile or long term currency swap markets are illiquid, the Private Partner may have limited ability to accept the risk of exchange rate fluctuation and will seek to transfer the exchange rate risk to the host country by requiring that some or all of the contract price is linked to a foreign currency, such as USD.	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of a change in exchange rate. Exchange rate risk can be substantial in markets where exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets.
			[●]	●	**Rate changes during project:** Allocation of exchange rate fluctuation risk over the life of a project will	Exchange rate risks are more substantial in markets where

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					depend on the relevant project jurisdiction and the nature of the project costs. In most PPPs, the Private Partner will bid and be paid by the Contracting Authority in the domestic currency of that country. It may, however, incur costs in a foreign currency and such costs are translated into the bid price in the domestic currency on the basis of a particular exchange rate. In some PPPs, the Private Partner (and its lenders) may seek to transfer the exchange rate risk to the host country by requiring that some or all of the contract price is paid in or linked to a foreign currency, such as the USD. **Construction phase:** Exchange rate risk can arise where some or all of the construction costs are denominated in a currency different to the domestic currency. For example, where construction of the asset requires equipment that is manufactured overseas (which is common in desalination projects due to the specialised nature of certain pieces of desalination equipment (e.g. significant parts of the reverse osmosis system or distillation boilers), adverse exchange rate movement may result in such equipment becoming more expensive than anticipated when converting domestic currency. This may use up the contingency the Private Partner has provided for in its financial arrangements (and priced into its bid) and/or require the Private Partner to take on additional borrowing in the construction phase to finance these costs. **Operating phase:** As with construction costs, a similar risk may arise if the Private Partner incurs operating costs in a currency different to the currency of the PPP contract payments, for example replacement membranes for reverse osmosis plants, which are unlikely to be manufactured locally or priced in the local currency. Exchange rate risk can also arise if the debt used to finance construction is denominated in a currency different to the domestic currency of the price paid under the PPP contract. Adverse exchange rate movements during the operating phase where the debt is being repaid will result in debt repayment in the foreign currency requiring a larger proportion of the Private Partner's revenue. This may result in the Private Partner having insufficient funds to service its debt and/or may eat into its projected equity return. **Mitigation:** The Private Partner typically looks to mitigate exchange risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure the costs the Private Partner incurs are effectively fixed instead of fluctuating, and protects it against adverse rate movements. The cost of such hedging will be part of the contract price bid. Devaluation of a local currency beyond a certain threshold may also trigger a non-default termination, or a "cap and collar" subsidy arrangement from the Contracting Authority.	exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets). In more mature markets, the risk of currency fluctuations is typically not substantial enough to require the Contracting Authority to provide support and exchange rates risks are addressed solely through the Private Partner's own hedging arrangements. Where the exchange rates are more volatile, access to long term hedging may be either unavailable or too expensive. The likelihood of debt being dominated in a foreign currency is more likely in markets where financing by multilateral or international banks may be required (e.g. in less mature markets where there is limited depth in the local debt capital markets). *See also Strength of Contracting Authority payment covenant under Early Termination risk.*
	Interest rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority normally expects the Private Partner to bear the risk of a change in the reference interest rate between submission of bid and financial close for a specific time period (e.g. 90 days). Any rate changes after this time period will be a Contracting Authority risk except in exceptional circumstances (e.g. where there is prolonged period between bid submission and financial close).	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of an adverse change in interest rate.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
				●	**Rate changes during project:** The Private Partner will typically bear the risk of interest rate fluctuations over the life of the project but this will depend on the specific project and its jurisdiction. The Private Partner will seek to mitigate this risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure the interest rate the Private Partner is required to pay is effectively fixed instead of fluctuating, and protects it against adverse rate movements. The cost of such hedging will be part of the contract price bid.	In mature markets, the risk of interest rate fluctuations is not substantial enough to require the Contracting Authority to provide support and is typically addressed solely through the Private Partner's own hedging arrangements. In other (less stable) markets this may not be possible due to interest rate volatility or lack of long term hedging availability and in some circumstances it may be more appropriate for the Contracting Authority to retain interest rate risk if it can bear the risk more efficiently than the private sector.
	Unavailability of insurance		●		The responsibility for placing required insurances and the cost of doing so is typically borne by the Private Partner. However, PPP contracts typically also include provisions to address the risk of insurance becoming unavailable or only available at a cost which exceeds a level at which the Private Partner is able to price in reasonable contingency. This only applies if the uninsurability is due to factors unrelated to the Private Partner. Where neither party can better control the risk of insurance coverage becoming unavailable or more expensive, this is typically a shared risk. How this is addressed will depend on the specific project and jurisdiction. For the purposes of PPP projects, insurance is generally deemed unavailable to the extent (a) it is no longer available in the international insurance market from reputable insurers of good standing or (b) the premiums are prohibitively high (not just more expensive) such that contractors in the project jurisdiction are commonly not insuring such risk in the international market. As part of the feasibility study the Contracting Authority should consider what insurances are necessary and available at a reasonable premium and whether insurance might become unavailable (or too expensive) for the project given the location and other relevant factors. This is essential for assessing risk allocation for relevant events (e.g. force majeure risk allocation) and for the Private Partner to price its risks.	The standard approach as regards unavailability is common in mature markets. In some less mature markets, if insurance becomes unavailable, the Private Partner is typically relieved of its obligation to take out the required insurance but, unlike the mature market position, the Contracting Authority does not become insurer of last resort and the Private Partner bears the risk of the uninsured risk occurring. If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) and the parties are unable to agree on suitable arrangements, then the Private Partner may need an exit route (e.g. the ability to terminate the project on the same terms as if the unavailability of the insurance were an event of force majeure). In negotiating an insurer of last resort position, the Private Partner and, in particular, its lenders, will carefully assess the Contracting Authority's credit and its ability to meet liabilities if an uninsurable event occurs. This is a reason why this position may be more likely in economically stable markets. In less stable markets the parties may negotiate more over whether a particular insurance should be an obligation in the first place and how the risk (and its occurrence) might be managed (e.g. through the force majeure provisions). In less mature markets, wider reference criteria may be needed in defining unavailability (e.g. to address a situation where the pool of benchmark contractors is insufficient to draw a meaningful comparison). Projects in some locations may find it more difficult to get insurance for certain events under commercially viable conditions. In this case the parties will need to find a solution to unavailability at the start of the contract.
			●		**More costly premium:** Where the cost of the required insurance increases significantly (without becoming prohibitive), the risk is typically shared by the parties by either having an agreed cost escalation mechanism up to a ceiling or a percentage sharing arrangement. This allows the Contracting Authority to quantify the contingency that has been priced for this risk.	
			●		**Unavailability:** A standard approach in mature markets to manage unavailability of insurance is that where required insurances become unavailable, the contract typically requires the parties to try to agree a solution to manage the uninsurable risk and the Private Partner is relieved from breach of its obligation to take out the required insurance to the extent the unavailability is not due to its actions. If a solution is not agreed, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project as "insurer of last resort" (i.e. to effectively self-insure and/or put in place its own insurance cover and pay out in the event the risk eventuates). If the Contracting Authority chooses to assume responsibility for the uninsurable risk, it may require the Private Partner to regularly approach the insurance market to try to obtain the relevant insurance and the contract price should be adjusted to reflect that the Private Partner is no longer paying the corresponding insurance premium.	
			●		**Occurrence of uninsurable event:** With the mature market standard approach, if an uninsurable event occurs, the Contracting Authority may (a) terminate the contract (typically on a force majeure basis plus corresponding third party liability payments) or (b) pay the Private Partner the equivalent of insurance proceeds and continue the project. The approach to termination compensation reflects the general acceptance that uninsurability is neither party's fault and should be a shared risk.	

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		[●]		[●]	**Unavailability due to fault:** Risk allocation will be affected by the reason for unavailability. As highlighted above, the provisions should only apply to the extent the Private Partner is not responsible for the insurance unavailability. Equally, if the unavailability is caused by the Contracting Authority's actions, the Private Partner may want to negotiate a right to terminate if a fundamental risk becomes uninsurable.	
	Refinancing		●	●	There are two key risks associated with refinancing (the changing or replacing of the existing terms on which the Private Partner's debt obligations have been incurred): (i) the risk that a project will be unable to raise the required capital to refinance a project at a given point in time; and (ii) the risk that a refinancing of debt will create additional project risks (e.g in terms of potential increased liabilities for the Contracting Authority and increased financial instability of the Private Partner). The risk of failing to raise required capital will arise in projects where the Private Partner (a) needs to seek a rescue refinancing to reschedule its borrowings if it is struggling financially, or (b) needs to replace short term (mini perm) financing which may have been the only financing option available to (or desirable for) the project initially. This is typically a Private Partner risk. Mitigation measures can include, in the case of mini perm financing, raising debt capital that has a repayment schedule that is matched to the PPP contract and project revenues available over the period of the PPP contract or by structuring the debt in several tranches of different tenors so that refinancing risks are smaller but arise more frequently. Refinancings may also occur where the Private Partner wants to take advantage of better financing terms available in the market (e.g. where the market recovers after a global financial crisis or after construction completion when the project is perceived to be less risky by funders). The risk of a refinancing creating additional project risks will be a risk for both the Private Partner and the Contracting Authority. The Contracting Authority needs to ensure that a refinancing does not adversely affect it (e.g. by increasing the level of its potential liability for termination compensation above what would have been the case under the original financing documents/financial model or increasing the risk of such liability falling due if the financial stability of the Private Partner is affected). To mitigate this risk, the contract should specify that the Contracting Authority's consent is required in specified carefully drafted circumstances. Where the result of a refinancing is that the Private Partner's debt costs are reduced, resulting in greater profit and in turn a higher equity return (typically known as "refinancing gain"), it may be appropriate for the gain to be shared between the parties (e.g. to the extent it increases the original forecast equity return in the financial model). The Contracting Authority may expect to share a percentage of the refinancing gain (e.g. 50%) and this is particularly important given the use of public funds to pay for the PPP project. To ensure it does not miss out on an anticipated share of any refinancing gain, the Contracting Authority should ensure that all relevant definitions are carefully drafted. The way the Contracting Authority receives its share of the gain will depend on the nature of the refinancing and discussions at the time. Options include: (a) a lump sum upon the refinancing to the extent the Private Partner receives such amounts at the time of the refinancing; (b) a lump sum or periodic sums at the time of receipt of the relevant payments, or the receipt of the projected benefit; (c) a reduced capacity payment; or (d) by a combination of the above (in accordance with the applicable payment model). For a more detailed analysis of typical refinancing provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Refinancing risks will ultimately depend on the depth and liquidity of the relevant capital markets. In more developed capital markets, the risk of failing to raise required capital is unlikely to be a significant risk as long-term finance is available from the outset. Mini perm financing is more common in countries where the capital markets are less developed and there is a lack of a market for long term debt instruments. However, banks globally already face greater regulatory pressure which affects the loan tenor they can offer, and it is likely they will face increasing restrictions even in developed markets which may lead to shorter initial debt tenors and increased refinancing needs. It has become increasingly acknowledged in mature PPP markets that it would not be fair for the Private Partner to enjoy the entire benefit of a refinancing gain where it is not entirely responsible for the availability of improved financing terms (e.g. where the market recovers after a global financial crisis). In emerging markets, particularly for demand risk projects, there may be limited scope for the Contracting Authority to negotiate refinancing gain sharing if such gain is a key incentive for potential bidders. Refinancing provisions may not be included. This is more likely in untested "riskier" markets where the prospect of refinancing gain is a key driver to bidders' participation (as has been the case, for example, in the Philippines). As with more mature markets, the potential for sharing refinancing gain should increase as the PPP market becomes more established and perceived risks decrease.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Private Partner failure/insolvency**			●	The Private Partner essentially bears the risk of failing to have the requisite technical or financial capability to deliver the project in accordance with the contract. However, as the consequences of such failures can lead to interruption in service and inconvenience to the Contracting Authority and users, as well as potential termination liabilities for the Contracting Authority, the Contracting Authority must carry out a thorough evaluation of each bidder to ensure that it selects the right partner to deliver the project, with whom it can develop the necessary long term partnership and meet any aspirations it may have as regards community engagement and local employment and skills development. *See also Risk Allocation in PPP contracts in the Introduction.*	
	Sub-Contractor failure/insolvency			●	The Private Partner is responsible for its sub-contractors and bears any associated risks, unless the Contracting Authority imposes mandatory sub-contractors, in which case it may need to bear, or share, certain sub-contractor-related risks. However, the sub-contractors should form part of the Contracting Authority's evaluation of each bid for the reasons highlighted in relation to the Private Partner.	
	Change in Private Partner ownership			●	Complying with any contractual restrictions on change in ownership will be a Private Partner risk. The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved and that any restrictions on, for example, foreign ownership of critical infrastructure are not circumvented. As the project is awarded on the basis of the Private Partner's technical expertise and financial resources, it will also want to ensure key parties such as parent company sponsors (and sub-contractors) remain involved. The Contracting Authority will typically prohibit any change in the Private Partner's shareholding for a period (e.g. by a lock-in for the construction period or until a couple of years into the operating phase) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met. The Contracting Authority's desire for certainty of involvement of key participants will need to be balanced with the private sector's requirements for flexibility in future business plans. This is particularly in respect of the equity investor markets and the added benefits of allowing capital to be 'recycled' for future projects.	In less mature markets, there are typically more restriction on the Private Partner's ability to restructure or change ownership. Overly restrictive provisions may deter investment, so this needs to be assessed in terms of the benefits to the Contracting Authority of both ensuring sufficient competition in the bid phase, and enabling parties to recycle their investment into other projects in the jurisdiction. Once the project is operational, for example, it may be reasonable for financial investors seeking regular returns to invest in place of certain of the initial (e.g. construction party) sponsors.
	Permitted Contracting Authority step-in	●		●	The risk associated with Contracting Authority step-in depends on the grounds for stepping in and whether due to the Private Partner's fault or not. Step-in circumstances include emergencies involving the emergency services, intervention to protect against social and environmental risks and fulfilling a legal duty to provide essential services of continuity of service. The scope and terms of the Contracting Authority step in is a key bankability point due to the potential impact on the parties' liability. **Private Partner fault:** If step in is due to Private Partner fault or an event it is responsible for, the Private Partner essentially bears the risk of costs incurred by the Contracting Authority (and itself). In some jurisdictions this liability may be capped. The Private Partner is usually given relief from performance of its affected obligations and may receive some payment in respect of its obligations. **No Private Partner fault:** In this situation, the Contracting Authority bears the risk and will be responsible for its own costs. The Private Partner will be given relief from performance of its affected obligations and be entitled to extensions of time and relief on the basis of a compensation event (except to the extent the cause falls under another provision (such as force majeure) in which case that provision will apply). It will be entitled to full payment subject to certain deductions and may also require a cost indemnity from the Contracting Authority. In each case, risk should be allocated in respect of later issues around interface between solutions implemented during step in and the Private Partner's planned delivery solution, as well as any other risks that are allocated to the Private Partner.	In some jurisdictions (e.g. France), step-in is only contemplated in a breach situation and the Private Partner typically bears all cost up to a certain percentage (e.g. 15%) of project costs. A termination right may arise if the situation subsists for a certain period (e.g. 6 – 12 months). In some jurisdictions, the Private Partner may receive full payment as if it was performing the service in full or partial payment to reflect the affected obligations. In each case this will be subject to deductions and could result in zero payment. In some jurisdictions (e.g. in some EU countries and Australia), the Contracting Authority may not accept any liability when stepping in due to a Private Partner breach or event which is the responsibility of the Private Partner, except in the case of gross negligence in an emergency step in, fraud or bad faith. The scope and terms of step-in will be particularly relevant for Private Partners in jurisdictions which are less predictable or have underdeveloped or less stable legal or

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					For a more detailed analysis of typical Contracting Authority step-in provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	regulatory frameworks as the Private Partner will be concerned to limit the Contracting Authority's potential effect on the delivery of the PPP project. It may only want to agree to such rights in projects in sectors and jurisdictions where the Contracting Authority is committed to ensuring continuous delivery of the essential public service and has demonstrable experience in such delivery
	Change in Contracting Authority ownership/status	●			The Contracting Authority should bear the risk of any change to its ownership/status which adversely affects the project, for example, where its financial covenant and credit are adversely impacted. The Private Partner will typically have a right to terminate if certain criteria are not met and be entitled to compensation.	In stable markets, this risk may not be specifically addressed in the contract if satisfactory statutory or constitutional protections are available to the Private Partner. In less stable and untested markets, more specific provisions may be required., particularly where the Contracting Authority is not a central government entity.
	Disputes		●		**Private Partner/Contracting Authority disputes:** The risk of disputes is a shared risk and the consequences will depend on the outcome of the dispute. To minimise the risk of uncertain and costly outcomes, the contract should expressly include a clear governing law (typically the domestic law of the Contracting Authority's jurisdiction) and choice of dispute resolution forum (courts or arbitration). Efficient and fair dispute resolution processes should be included which provide for an escalated procedure where matters cannot be resolved between the parties' senior management, resolution of technical disputes by an independent expert, and recourse to the chosen forum. If the contract does not contain appropriate procedures this is likely to deter potential bidders and their lenders as efficient dispute resolution is a key bankability issue. A failure by the Contracting Authority to follow contractually agreed processes may also have an adverse effect on private sector interest in other PPP projects in that jurisdiction. There may be investment treaties applicable to the PPP arrangements with foreign parties, but these are no substitute for proper dispute resolution provisions in the contract itself. The Contracting Authority may be expected to waive any privileges and sovereign immunities which it enjoys before local and foreign courts (such as immunity from any suits by the Private Partner). Transparency and public access to information about disputes may be an important factor in choice of forum. In some jurisdictions the legal process is public which contrasts with arbitration which is generally a confidential and private process. Where additional agreements govern the relationship between the parties themselves, consolidation of related disputes and the joinder of related parties may be appropriate. To reduce the risk of concurrent processes, the agreements should include similar dispute resolution clauses agreeing to this. The Private Partner should be obliged to continue with performance of the contract while the dispute is resolved and, if so, will bear the risk of failing to do so. For a more detailed analysis of typical governing law and dispute resolution provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Contracting Authorities will typically select domestic law and local courts as the forum for disputes. This is for a variety of reasons including familiarity and compatibility with any concession/PPP legislation. It also minimises the risk that local users and other stakeholders will bring claims in a different court. In jurisdictions with a less established and experienced legal system, the Private Partner is likely to want an established dispute resolution forum (such as a recognised arbitration centre for the particular region), rather than to rely on local courts. There may be circumstances where this option needs to be considered by the Contracting Authority as a necessary compromise in order to ensure the project is bankable. For the same reason, there may be certain cases where the Contracting Authority will consider having a foreign law as the governing law of the contract. Choice of forum may be restricted in some jurisdictions due to local law requirements (e.g. prohibiting referral of disputes to a foreign court or international arbitration, or being subject to a "foreign" law). This is particularly common in certain civil law countries where solely specific administrative courts are able to judge public authority decisions and/or contracts. Additionally, there may be local law limitations (under constitutional arrangements, public policy or otherwise) on contractually agreeing to waive sovereign immunity. There may also be reputational and political issues if a Contracting Authority is seen to exempt public sector projects from the jurisdiction of domestic courts.
				●	**Sub-contractor disputes:** The Private Partner is responsible for disputes with its sub-contractors. The Contracting Authority should avoid the risk of getting involved in expensive and time-consuming peripheral disputes with other parties. However, it may want to consider allowing certain disputes it has with the Private Partner to be joined with disputes on the same matter between the Private Partner and its sub-contractor where the forum for resolving the dispute is appropriate. Any assessment of the need for	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					joinder provisions is likely to be fact-dependent.	
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.*		●	●	●	Responsibility for disruptive technology risk depends on the project circumstances. The Private Partner's obligation is to meet the output specification. If it fails to do so due to obsolescence of equipment or materials it is likely to suffer reduced revenue (which could lead to financial distress) and, above a particular threshold, may be at risk of termination. In this case it bears the risk of potentially having to replace relevant technological solutions (e.g. if the Private Partner has chosen a reverse osmosis solution and the membranes it requires are no longer manufactured). However, if it is performing above that threshold, the Contracting Authority cannot require it to replace technology simply because more efficient technological or environmentally friendly solutions are available unless there is an agreed contractual mechanism for doing so. Examples of where this may be relevant include, in the case of a combined power and desalination project, if the power density of renewable energy sources (e.g. solar power) were to increase to such an extent that they could viably replace the captive fossil fuel power source. It may be appropriate additionally to agree a specific cost sharing mechanic under which the Contracting Authority can request technological upgrades with appropriate cost sharing according to the reason for the request (e.g. if the replacement solution will improve health and safety or have social/environmental benefits). The same considerations apply if the Private Partner wants to make a technological change which is not strictly necessary and it may be appropriate for the Contracting Authority to consider incentivising the Private Partner to propose changes which will be of public or environmental benefit. The Private Partner will seek to mitigate its potential exposure through clear contractual cost and improvement parameters, beyond which any changes will be treated as a Contracting Authority variation of the PPP contract and entitle the Private Partner to relief in accordance with the contractual variation mechanic. *See also Variations risk.* It is important to take into account that some disruptive technologies may have both upside and downside effects on a project, and therefore impose a cost or burden on the project as well as increasing efficiency or providing social and environmental benefits. It may therefore be appropriate to consider mitigating mechanisms in any contractual solution. In many jurisdictions changes can be made only in accordance with pre-agreed contractual mechanisms, to avoid third party challenges on the basis that the amendments are so substantial that the existing contract should be retendered.	Disruptive technology risk is coming under increasing focus in all markets. This is particularly the case in relation to technological changes relating to environmental protection and this area may require its own treatment in the contract (e.g. through specific treatment under the contractual variations mechanism and/or through other specific contractual obligations).
FORCE MAJEURE RISK *The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.*	**Force majeure events**		●		Force majeure is typically treated as a shared risk where neither party is better placed than the other to manage the risk or its consequences. **Scope:** Force majeure is an event (or combination of events) outside the reasonable control of the contracting parties which prevents one or both parties from performing all or a material part of their contractual obligations. In some – typically civil law– jurisdictions the definition may require the event to be unforeseeable or not reasonably avoidable. Many jurisdictions have a concept of force majeure under general law and, particularly in civil law jurisdictions, this can limit the freedom of the parties to derogate from the scope of the legal concept and agree something different in the contract. However, most PPP contracts include specific force majeure provisions, whether they are civil law or common law governed, as this provides contractual certainty. The contract should be clear to what extent underlying law applies. **Approach:** Depending on the jurisdiction, the definition of force majeure may be an open-ended catch-all definition, an exhaustive list of specific events, or a combination of both. The open-ended catch-all definition is often seen in civil law-governed contracts and may also be more appropriate in markets which are less developed or stable and where there is little precedent or certainty.	The scope of force majeure will depend on the particular project and jurisdiction. In France, for example, the affected party is relieved from its obligations if force majeure prevents performance and French jurisprudence has defined the characteristics of a force majeure event as (i) beyond the control of the parties, (ii) unforeseeable and (iii) impossible to overcome.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					A non–exhaustive list of events may also be included. Qualifying events may be "natural force majeure" events (such as natural disasters and severe weather events, and possibly climate change events) and certain "political force majeure" events (such as strikes, war, government action etc). The exhaustive limited list approach is more common in developed and stable markets where the Private Partner has more certainty as regards the risk of events occurring and how it can manage them. It may be comfortable that events which might be force majeure in a less mature market (e.g. some types of industrial action) may instead be treated as relief events in a developed and predictable market. Under this approach, force majeure events are typically (but not necessarily exclusively) events which are uninsurable. Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; and (iv) discovery of any species-at-risk, fossils, or historic or archaeological artefacts. As market practice develops, certain climate change events might also be included. *See also Site Condition under Land availability, access and site risk and Climate Change event under Environmental risk.* For a more detailed analysis of typical force majeure provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. **Risk qualification:** The Contracting Authority should consider whether it can limit its risk by carefully defining the events which qualify as force majeure, and/or qualifying or excluding them as appropriate. For example, in some projects earthquakes may only qualify as force majeure if they are above a specified seismic intensity. Alternatively, an event may only qualify if it has subsisted for a particular length of time. In some projects, risk is allocated to the Private Partner and/or shared for the first few months, and subsequently becomes a shared risk or Contracting Authority risk (with entitlement to terminate if the force majeure event continues for more than a defined time period (e.g. 6 – 12 months)). Using an open-ended definition of force majeure widens the risk shared by the Contracting Authority, but may be appropriate in some markets. The availability of insurance for certain events will be one of the main criteria in determining the extent to which an event should qualify as force majeure and/or how the consequences should be addressed. Certain risks may be more likely to constitute a force majeure event if they occur in one phase than another (e.g. events in the construction phase affecting materials supply).	In less mature markets, the list of specific events is likely to be wider than in more mature markets and include natural risk events, which typically can be insured (e.g. fire / flooding / storm etc), and force majeure events which typically cannot be insured (e.g. strikes / protest, terror threats / hoaxes, emergency services action etc). The extent to which the risk will be shared or allocated to one of the parties will depend on its nature and on the particular jurisdiction.
		●			**Contracting Authority political risk:** In some markets, certain political risk events may need to be allocated in full to the Contracting Authority because the Private Partner cannot reasonably be expected to bear any of the risk and/or because the Private Partner may price in such a high contingency in respect of the risk that it makes the contract unaffordable. Where the Contracting Authority bears the full risk of these risks, this may be addressed under the force majeure provisions but with "political force majeure" receiving different treatment to the shared risk force majeure events. Alternatively, these political risks may be treated in a separate provision under the heading of "material adverse government action" or similar (which may also include other forms of event for which the Contracting Authority is deemed solely responsible). *See also MAGA risk.*	In certain markets, it may be necessary to differentiate how similar types of risk events are treated, depending on where they occur. For example, in more politically volatile jurisdictions, war events might be wholly a Contracting Authority risk where they occur within (or are started by) the country, but a shared risk otherwise. *See also MAGA risk.*
	Force majeure consequences		●		The basic principle of force majeure is that the risk is shared and each party bears its own losses. However, there may be circumstances where it is appropriate for the Contracting Authority to provide relief to the Private Partner, provided the Private Partner has made reasonable efforts to mitigate the force majeure effects and to the extent it was not responsible for the event. In addition to granting the Private Partner relief from breach of its affected obligations, certain time or cost relief may be granted (sometimes where a particular threshold of costs or time delay has been reached). This will depend on the phase in which the event occurs and should be considered at the time, together with the impact of the event on the Contracting Authority and the options available to it. Termination following prolonged force majeure (e.g. 6 – 12 months) may also be available. If the Private	The approach to cost and deductions relief varies across jurisdictions. In developed markets (particularly some civil law jurisdictions) Contracting Authorities may be more willing to make compensation payments during a force majeure event. In some jurisdictions, the contract will expressly identify only specific force majeure risks for which the Contracting Authority will grant financial relief (e.g. raw materials price volatility). It may not be as common in less mature markets for cost

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					Partner has the ability to terminate the PPP contract on the basis of a prolonged force majeure event, the Contracting Authority may want to include an option to require the PPP contract to continue, provided that the Private Partner is adequately compensated. This approach is more likely to be encountered in a more established PPP market. **Construction phase:** The consequences for the Private Partner of a force majeure event in the construction phase are that it may be unable to meet all or part of its contractual obligations, in particular key dates (such as the operation commencement date); may suffer delayed and/or lost revenue; and may incur additional financing and other costs (e.g. in relation to mitigating the event), both during and after the force majeure event. As well as relief from breach of the affected obligations, the Contracting Authority may decide to grant certain cost relief (either while the force majeure event subsists or through the operating phase if the contract continues) on the basis that the Private Partner has limited means to absorb additional costs and it may be in both parties' interests to avoid the Private Partner going insolvent. For example, it may elect to make a compensation payment at the time or, if the contract continues, grant extensions of time, increases to the rate of capacity or production payments and/or an extended operating period so that the Private Partner has the opportunity to recoup lost revenue and costs. **Operating phase:** The consequences for the Private Partner of a force majeure event in the operating phase are that it may be unable to meet all or part of its contractual obligations (including failing to deliver the service); may suffer delayed or lost revenue; may incur additional financing and other costs; and may possibly be unable to service its debt repayment obligations. Again, in addition to relief from breach of its affected obligations, the Private Partner may be granted grant certain cost relief and/or additional payment on the same principles as described in the construction phase. **Insurance:** Project insurance (physical damage and loss of revenue coverage) will be a key mitigant in respect of physical damage, to the extent it is available, and an important consideration in respect of compensation and how to continue the project. For example, if the water desalination project is destroyed prior to handover as a result of force majeure, the Private Partner will typically be obliged to re-build it at its own cost, to the extent the risk is insurable. Design resilience is also an important mitigating factor, for example, for projects with significant seasonal weather variations or where earthquakes are common.	compensation to be paid during force majeure unless caused by an event deemed to be a political risk for which the Contracting Authority is wholly responsible (e.g. a MAGA event). *See also MAGA risk.* Force majeure relief should be distinguished from relief available under any hardship doctrines *(see Glossary definition)* existing under the underlying law of the project jurisdiction.
MATERIAL ADVERSE GOVERNMENT ACTION RISK (MAGA) *The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.*		●			In projects where a MAGA provision is appropriate, the Contracting Authority bears the risk of specific "political" actions having a material adverse effect on the Private Partner's ability to perform its contractual obligations, or on its rights or financial status. The Contracting Authority is responsible for costs and delays and is typically at risk of termination for prolonged MAGA events. Although not all jurisdictions use the term "MAGA", many have equivalent provisions under different terminology. MAGA events typically include: deliberate acts of the state such as outright nationalisation or expropriation in relation to the PPP project; a moratorium on international payments and foreign exchange restrictions; certain governmental acts (such as not granting essential approvals where the Private Partner is not at fault); and politically-inspired events such as national strikes. Change in law is also a form of MAGA. Although some of these events may not seem as obviously within the Contracting Authority's control itself as others (e.g. if they relate to other arms of government), market practice is that they are accepted by the Contracting Authority. This is because passing them to the Private Partner may result in it being unable to enter into the contract or pricing in such contingency that the contract is unaffordable. The list of events will depend on the individual project circumstances and the position agreed on force majeure events, and the Contracting Authority can limit its risk by qualifying relevant events by reference to a clearly defined materiality threshold. The process and consequences of MAGA are broadly similar to force majeure as regards the parties trying to find a solution and how the Private Partner may be compensated. The key difference is that the	MAGA type clauses are more likely in less predictable and stable markets where the Private Partner (and its lenders) may require a clear regime to address specific government-related actions for which the Contracting Authority is responsible. This may be because of an actual or perceived likelihood of certain MAGA events occurring (e.g. war or civil unrest), or a lack of track record of PPP contracts being run successfully free from political interference over long periods of time and across political cycles. In mature politically stable markets, the Private Partner (and its lenders) are often comfortable that the type of MAGA risks likely to arise are limited. Instead of being detailed in a specific Contracting Authority risk clause, they can be addressed through the shared risk force majeure provisions and compensation event type provisions (and the general right to terminate for Contracting Authority default in limited circumstances). Investors and lenders may be able to obtain political risk

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					underlying principle behind MAGA relief is to put the Private Partner back into the position it would have been in had the MAGA event not occurred. The parties may terminate for prolonged MAGA, with compensation payable on a similar basis to Contracting Authority default termination. The Contracting Authority may be able to reduce its liability in some cases if it can negotiate different treatment for MAGA events which are not as clearly within its own control and influence. For a more detailed analysis of typical MAGA provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. *See also MAGA/Change in law termination under Early Termination risk.*	insurance in respect of some of these types of risks. This is more common in politically young or unstable markets. Some jurisdictions are more politically volatile internally than others and certain political risks will be treated differently. For example, war events may be treated as MAGA if they occur within the country, and shared risk force majeure if outside it.
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.*	**Compliance with applicable law**	●		● [●]	Compliance with applicable law and mandatory regulation is each party's risk. The Private Partner is typically subject to an express contractual obligation and will be in breach if it does not comply with applicable law, subject to change in law relief. The contract must be clear what laws and other mandatory regulations and industry codes the Private Partner is obliged to comply with. This is essential not only so the Private Partner can price its compliance, but also in order to determine what constitutes a change in law so that change in law risk can be allocated effectively. Compliance by third parties is likely to be a Contracting Authority risk where it has failed to enforce compliance and there is an adverse effect on the project.	
	Change in law (and taxation)	●	[●]		The Contracting Authority primarily bears the risk of unexpected changes in law which were not in the public domain before a specified cut-off date in the bid phase and which cause the Private Partner's performance of its contractual obligations to be wholly or partly impossible, delayed or more expensive than anticipated (or impact its investors). This is because the Private Partner has contracted to provide the specific water desalination project at a specified price based on a known legal environment and typically has limited means of offsetting adverse consequences of unexpected law changes. As change in law may also benefit the Private Partner, change in law clauses are often reciprocal, to ensure the Contracting Authority benefits from the "positive" financial consequences of a legislative change. The Contracting Authority's risk can be mitigated by ensuring that the contract clearly defines what constitutes a change, the relevant cut-off date and what constitutes being in the public domain. This will vary according to the nature of the project and jurisdiction concerned. There are various approaches to risk allocation as briefly summarised below and the degree of risk sharing will depend on the type of change and the approach suitable to the maturity and stability of the relevant legal market. Any risk that is transferred to the Private Partner is likely to be reflected by contingency pricing in its bid which may result in the Contracting Authority paying for something that never happens. The Contracting Authority should be mindful of how it will fund changes in law which are at its risk should they arise. For a more detailed analysis of typical change in law provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Change in law risk may be treated as a MAGA event if the treatment agreed for this form of political risk is the same as for other MAGA events. Generally speaking, where a detailed approach to risk allocation is involved and where the consequences do not lead to termination, change in law is best dealt with separately – this is more typical is established markets. *See also MAGA risk.* In defining a change it may be appropriate for the definition to include any modification in the interpretation or application of any applicable law. This is particularly likely in common law jurisdictions. As highlighted by the different approaches, in mature legally stable markets the Private Partner will likely have less protection than in jurisdictions where changes in law are less predictable and/or more likely due to underdeveloped or less stable legal or regulatory frameworks. Approach (a) is often seen in developing markets with less established legal environments as it may be the only way that private finance can be raised and should also enable the Private Partner to offer a more competitive price. Approach (b) has also been seen in more developed markets and some emerging markets. Approach (c) is seen in more experienced PPP markets. While it will involve some contingency pricing, this
		●			**Approach (a) Contracting Authority risk:** The basic approach is that the Contracting Authority bears all the risk of change in law and provides full relief to the Private Partner.	
		●	●		**Approach (b) Limited risk sharing:** A more nuanced approach is for the Private Partner to accept a certain annual monetary threshold up to which it accepts any unexpected change in law risk and above	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					that threshold the Contracting Authority bears the risk/cost. This enables the Private Partner to price the risk it bears.	approach is considered generally more beneficial to the Contracting Authority, but may not be bankable in every jurisdiction and should be contemplated on a case-by-case basis. Even in markets using this approach there will be instances where this risk allocation is not fully achievable due to the nature of the PPP project and the extent to which the applicable legal and regulatory regime is settled. Past models (including in the UK) used to require the Private Partner to assume, and price for, a specified level of general change in law capex risk during the operational period, before compensation would be paid. The UK Government ultimately decided that this allocation did not represent value for money and reversed this position. Some countries which adopted the UK model had already taken this approach. Although a Contracting Authority may bear all change in law risk at the start of a PPP program, once a track record and/or legal environment is established in its jurisdiction which gives the private sector greater confidence in the stability and predictability of the regime, Contracting Authorities procuring new PPP projects may be able to explore some risk transfer to the Private Partner. A termination right as a consequence of change in law is not considered necessary in all jurisdictions. In civil law jurisdictions it is common for the Private Partner to have a specific right to terminate the contract where performance of the PPP contract would entail a breach of law that cannot be remedied by a Contracting Authority variation. This is not usually seen in common law jurisdictions with established legal frameworks as the Private Partner and its lenders are able to take a view that it is highly unlikely that a change in law would result in such drastic consequences without means of holding the government accountable. In civil law jurisdictions, Private Partners may sometimes rely on underlying legal principles such as hardship doctrines *(see Glossary definition)* for relief. However, widespread market practice across civil and common law jurisdictions has shown that the private sector is unwilling to enter into PPP contracts on such a basis as both lenders and sponsors require express contractual certainty in relation to the potentially significant impact of changes in law.
			●		**Approach (c) Advanced risk sharing:** With this approach the Private Partner is kept whole in respect of unexpected changes in law which are: (i) discriminatory (e.g. to the project or the Private Partner); or (ii) specific (e.g. to the water sector or to investors in water businesses); or (iii) require capital expenditure after construction completion (i.e. in the operating period) (applicable law may protect the Private Partner from unexpected changes in the construction period if the relevant legal regime provides that changes in law affecting capital expenditure during construction do not apply retrospectively.) With this more detailed approach the Private Partner bears (some of) the general business risk that applies to all businesses (including operational expenditure or taxation affecting the market equally) and can absorb this in part through the indexation provisions typically contained in the pricing mechanism.	
			●		**Bespoke mechanisms:** It may be appropriate to have bespoke mechanisms for certain changes in law, such as those relating to climate change and environmental protection – market practice is still developing in this regard. *See also Climate change event under Environmental risk.*	
		●			**Consequences:** The Private Partner should always be entitled to relief from breach of contract where a mandatory change in law occurs which conflicts with an existing obligation or would make compliance illegal (and/or impossible). The contract typically contains a mechanism by which the Contracting Authority is deemed to request a corresponding contractual variation of the relevant obligation. The nature of the cost relief given to the Private Partner will be as described for a compensation event. Alternatively, the Private Partner may be entitled to a right to terminate (typically on a Contracting Authority default basis).	
		●			**Stabilization provisions:** Some projects may also provide for a stabilization clause that entrenches certain legal positions (such as the current tax regime) against any future changes in law. This may require a level of parliamentary ratification of the project contract.The stabilization method is generally not favoured by governments or non-governmental organisations (e.g. because the concept of Private Partner immunity from changes in environmental protection laws is unsatisfactory) and the Contracting Authority should instead seek contractual mechanisms to address such matters.	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Contractual termination provisions**		●		The allocation of risk for early termination depends on the termination grounds and these also determine the financial consequences of termination. The key risks relating to the contract being terminated early are that the Private Partner is deprived of its expected revenue stream to repay the debt it incurred developing the project and the project asset or service ceases to be delivered for the Contracting Authority. The complexity and variety of termination circumstances result in parties in all jurisdictions almost always seeking to include clear contractual mechanisms in the PPP contract which set out comprehensively what circumstances may give rise to termination, who may terminate and what the consequences of termination will be for the Contracting Authority and the Private Partner, as well as for lenders or other key third parties. Without such certainty, bidders and potential lenders may be deterred from bidding. The Contracting Authority should not be "unjustly enriched" by receiving an asset for which it has not paid the expected contractual price. This is an underlying legal principle in most jurisdictions and should be taken into account in the drafting of applicable termination compensation provisions. The Contracting Authority, besides making a payment, will need to consider the other risks associated with termination, such as the reputational risks, continuity of service delivery, completion of the works or maintaining the asset itself, or re-tendering the project (or a mix). For a more detailed analysis of typical early termination and termination payment provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	The increasingly market standard approach in all jurisdictions is to include contractual termination provisions in the PPP contract. However, in some civil and common law jurisdictions there may be underlying laws addressing certain termination rights and their consequences which apply without the PPP contract having to include termination provisions. While relying on underlying law rather than express contractual provisions is an approach less likely to be seen in common law jurisdictions, there can be certain exceptions as described, for example, under *Contracting Authority default termination and Voluntary termination by Contracting Authority*. Furthermore, if the transaction is financed in a shariah-compliant manner (such as through an ijara (lease) structure) consideration must be given to how ownership will be transferred following the termination. This is typically achieved through a Purchase Undertaking or Sale Undertaking of the underlying assets. In less developed PPP markets, it may not be easy to re-tender a project if there is no pool of alternative contractors to take on the project.
	Contracting Authority default termination	●			**Termination right:** The Contracting Authority bears the risk of termination for breaches which have a material adverse effect on the Private Partner or the project (e.g. expropriation in relation to the PPP project and failure to pay). The test is typically that the default event has made it impossible for the Private Partner to perform the contract or rendered the continued relationship untenable and any materiality threshold should be clearly defined. *See also MAGA risk*. To mitigate the risk of termination, the Contracting Authority should ensure that grace periods are built in (e.g. for non-payment) so that it has the opportunity to rectify the default and reduce the risk of a termination right arising purely from, for example, administrative error. **Compensation:** Although the exact approach depends on the relevant jurisdiction, the underlying principle is that the Private Partner should be fully compensated by the Contracting Authority as if the PPP contract had run its full course. The Private Partner would typically receive an amount in respect of senior debt (including where applicable hedge break costs), junior debt, equity investment and a level of equity return which from the Contracting Authority's perspective should where possible reflect the actual performance level of the Private Partner. Redundancy and sub-contractor break costs will also be included. The Contracting Authority should mitigate the amount it pays out by setting off deductions available to the Private Partner in respect of, for example, insurance proceeds, bank accounts, hedge break entitlements and surplus maintenance funds.	There are some common law jurisdictions (e.g. Australia) where the Private Partner is expected to rely on its common law rights to terminate for Contracting Authority default instead of having an express contractual right. This may be because termination for Contracting Authority default is such a fundamental step with enormous business and other ramifications for the Private Partner that the focus is instead on the enforceability of the contractual payment and time/cost compensation provisions applicable to breaches by the Contracting Authority. Similarly, in civil law jurisdictions the PPP Contract may be silent, and the Private Partner may need to apply to an administrative court to request contract termination (as was the case in earlier PPP contracts in France). Relying on underlying law is likely to deter bidders in markets where there is insufficient legal precedent and certainty.
	MAGA / Change in law termination	●			**Termination right:** Some PPP contracts may contain specific MAGA provisions which entitle the parties to terminate the PPP contract if there is a protracted MAGA event. The type of political risk events addressed by a MAGA provision may include the type of Contracting Authority defaults outlined under *Contracting Authority default termination* and also change in law where there is no solution agreed to continue the contract. This could mean that a PPP contract (i) only has a MAGA provision, (ii) only has a Contracting Authority default provision, or (iii) has a combination of the two and/or separate	Markets which are politically and legally stable are less likely to have separate MAGA termination provisions as the Private Partner and its lenders will be comfortable relying on a Contracting Authority default termination provision, combined with a shared risk force majeure provision and other contractual provisions (e.g. compensation events)

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					provisions addressing specific political risk matters such as changes in law. *See also MAGA risk and Change in law risk.* **Compensation:** The same principles will apply as outlined for Contracting Authority default termination but some jurisdictions may only allow the Contracting Authority to terminate for protracted MAGA-style events by implementing a voluntary termination. The Contracting Authority may be able to negotiate a reduced termination payment in respect of "no fault" MAGA events. *See also MAGA risk and Voluntary termination by Contracting Authority under Early termination risk.*	which provide time and/or money relief to the Private Partner in relevant circumstances of Contracting Authority responsibility.
	Voluntary Termination by Contracting Authority (Also commonly referred to as termination for convenience, public policy or interest. termination at will or unilateral termination.)	●			**Termination right:** In return for having the right to terminate for convenience, the Contracting Authority bears the risk of this event. It should have fully considered and prepared for termination before deciding to exercise its right to terminate. The notice period should be the minimum sufficient for both parties to make appropriate arrangements in respect of the handback of the project and to facilitate compliance with handback obligations. **Compensation:** The Private Partner's prime concern will be to ensure it is fully compensated for such early termination and able to comply with its handback obligations. The termination payment will be based on the same principles as for Contracting Authority default.	In some jurisdictions (more typically civil law) the Contracting Authority may be entitled to terminate the PPP contract on the grounds of public interest even without an express contractual right. This inalienable right is rarely invoked but the private sector (Private Partner, sub-contractors and lenders) will still require the PPP contract to cater for this low probability but high risk event as comprehensively as possible. The Contracting Authority may be required to substantiate the validity of the public interest ground (for instance, termination may not be permitted purely on financial grounds). In some jurisdictions (e.g. France) it is not possible to contractually waive the right to unilaterally terminate in the public interest, but it is possible for parties to agree in advance the procedure and consequences of such termination. In practice, these are usually identical to voluntary termination, or even a Contracting Authority default scenario. This is because the Private Partner is not responsible for, nor capable of mitigating, a public policy-driven decision to terminate unilaterally.
	Force Majeure and Uninsurability termination		●		**Termination right:** The risk of a force majeure termination arising is shared by the parties. Typically it will arise after 6-12 months of prolonged force majeure where the parties are unable to agree a solution to continue with the project. **Compensation:** The Contracting Authority pays termination compensation to the Private Partner reflecting the principle that force majeure events are neither party's fault and the financial consequences should be shared. This is not "full" compensation as this would result in the Contracting Authority bearing all the financial pain. Typically outstanding senior debt (including where applicable hedge break costs), initial equity, redundancy payments and sub-contractor break costs will be paid, less any applicable deductions as on Contracting Authority default termination). The Private Partner will lose all its forecast equity return (i.e. its anticipated profit) but the payment will be sufficient to repay all of its outstanding senior debt which will help address bankability concerns as to whether the debt will be kept whole in this termination scenario. The equity element will serve as a buffer for lenders if the termination payment does not cover 100% of the outstanding debt.	In some (typically less developed) markets, the Contracting Authority may succeed in negotiating paying no termination compensation in respect of certain natural risks which are insurable (and would reasonably be expected to be insured against as good operating practice), or a reduced amount reflecting insurance payments received (or receivable) by the Private Partner. This to some extent reflects the practice in more developed markets where these type of events may instead be classified as relief events which entitle the Private Partner to time relief only (but no ultimate right of termination). This will of course depend on the risk assessment by the Private Partner and its lenders. In less mature markets it is not uncommon for the senior debt to be guaranteed as a minimum in every termination scenario, and for rights of set-off below that figure to be restricted.
	Private Partner default termination			●	**Termination right:** The Private Partner bears the risk of termination by the Contracting Authority for serious failures by the Private Partner connected to delivering the PPP project. Termination events may be performance-related or relate more specifically to the financial status and corporate activity of the	In some civil law jurisdictions, insolvency laws may have an impact on the right to terminate the PPP in the event of insolvency of the Private Partner (or its shareholders).

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Private Partner. In order to mitigate the risk of termination, the contract should clearly define the default events and they should have reasonable in-built tolerance levels so that an appropriate threshold of poor performance has to be reached before termination rights arise. The opportunity to rectify should be given where feasible. The Contracting Authority can mitigate the risk of a termination payment arising as it has control over serving the termination notice that triggers it. It also has the ability to mitigate against the risk of Private Partner default even before the PPP contract is signed, by careful selection of the winning bidder. *See also PPP Project Preparation and Delivery in the Introduction.* **Compensation:** The Private Partner will typically be entitled to a compensation amount equal to a pre-set percentage (around 80 – 100%) of the scheduled outstanding debt, minus applicable deductions, and no equity compensation. The aim of a lender "hair cut" of less than 100% debt is to incentivise lenders to conduct proper due diligence and exercise their monitoring and step-in rights to ensure the Private Partner delivers the project satisfactorily so that it avoids termination and can repay the whole of the lenders' outstanding debt. Alternatively, a market value retendering of the contract may take place (or be deemed to take place) and the compensation paid to the Private Partner will be the price tendered (or deemed tendered), less applicable deductions. A third alternative is for the Private Partner to receive a payment based on book value.	A debt-based compensation method is the most common approach in emerging markets and availability-based PPP projects in jurisdictions such as France and is also seen in Germany. The market value retendering approach is more likely in a mature PPP market where there are likely to be a number of potentially interested purchasers in the relevant sector. Lenders to PPP projects in certain jurisdictions or in relation to certain assets may be reluctant to rely on a market-based valuation method for fear of undervaluation or underpayment. This is particularly likely to be the case in emerging markets where there is a limited PPP track record and a limited market. Some European jurisdictions have followed a book value approach but this may not accurately reflect sums owed and is not as common. In less mature markets it is not uncommon for a high percentage or the full senior debt to be guaranteed as a minimum in every termination scenario, and for rights of set-off below that figure to be restricted. The higher percentage haircut is seen in markets where the risks in respect of project failure and of the ability to rescue it are considered low (e.g. from a technical or resourcing perspective, or because the market is known), and the overall security package available to Lenders is otherwise sufficient to cover their debt. Lenders in such markets (e.g. in some projects in the US) may alternatively accept no compensation for the same reason but this is not common practice. If available in the relevant jurisdiction, lenders will seek a direct/tri-partite agreement with the Contracting Authority. The purpose of this is to give lenders step-in rights if the Contracting Authority serves a default termination notice or if the Private Partner is in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the Private Partner and seek a resolution to rescue the project and the right to ultimately novate the project documents to a suitable substitute private partner.
	Strength of Contracting Authority payment covenant	●		[●]	The Contracting Authority bears the risk of making the relevant termination payment on time and in the amount required. To mitigate the risk of failure, it will need to assess whether it will be able to pay a lump sum if such a large payment is not budgeted for or does not have backing from its government treasury department. Payment over time may be preferable and the Contracting Authority should in any event try to negotiate a reasonable grace period long enough to raise the necessary funds. The Private Partner and its lenders will typically want to close off their exposure to a terminated PPP project and avoid Contracting Authority credit risk as soon as possible. It is likely that they will favour a lump sum payment, particularly on Contracting Authority default termination where the most likely cause of termination is failure to pay. In some cases, the Contracting Authority may be asked to provide credit support of its payment obligations. Lenders may be reluctant to release security interests held over the PPP project assets until compensation	In jurisdictions where the Contracting Authority's credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in less stable regimes or emerging markets or in projects where the Contracting Authority is not part of central government. Support may be available via multilateral or export credit agencies or central government or sovereign guarantees. Lenders and investors may seek political risk insurance to cover the risk of the Contracting Authority or any government guarantor defaulting on its payment obligation.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					payments have been made in full. This may make the transfer of relevant assets back to the Contracting Authority difficult. In certain circumstances, the Contracting Authority may be able to negotiate an interim solution at the time of the termination, such as an arrangement whereby it has a right to access the PPP project assets during the period from the termination date until all termination compensation is paid, so long as the Contracting Authority complies with the payment terms with respect to such compensation. This approach is unlikely to be agreed at contract signature and certain issues will need to be clearly addressed (such as liability for damage to the asset while in the Contracting Authority's use).	A key concern for lenders in some jurisdictions relates to the requirement for parliamentary approval of appropriations in respect of contingent liabilities under project contracts. In the Philippines, for example, the government requires a two-year grace period for the payment of termination compensation as this is the maximum period of time for the parliamentary appropriation process. In less mature markets, issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination. Release of security interests may not be a relevant concern in some jurisdictions, such as France, where lenders would not typically take security over the project assets as this would only give them limited rights. They would more usually take security over the Private Partner itself.
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 Private Partner bears the risk of the project assets and land being handed back to the Contracting Authority in accordance with the contract and meeting the required handback conditions. This is linked to maintenance of the assets during the contract and may be complex given the need to define relevant asset standards. The circumstances around handback will vary from one PPP contract to another and will depend on matters including: the Contracting Authority's intentions with regard to post PPP usage, the nature and likely useful life of the asset, the stage at which the PPP contract comes to an end, whether termination occurs during construction or operation and any requirements under underlying laws in the relevant jurisdiction. To mitigate the risk of unexpected consequences, the contract should set out the requirements and process, including the Private Partner's obligations to facilitate an effective handover, hand over relevant licences and documentation and cooperate with the Contracting Authority so that the asset can continue the service. To mitigate the risk of the assets not being returned in the expected condition, the contract should include a mechanism for surveying conditions in advance of expiry and requiring relevant remediation. Typically the contract will provide for a retention fund to be established to fund remediation a certain period in advance of contract expiry, or for the Private Partner to provide some form of financial bond. Any funds remaining in existing lifecycle funds should be used/shared appropriately. For a more detailed analysis of typical handback provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition.*	In civil law jurisdictions, assets built on publicly owned land and/or used for a public service will often be subject to particular restrictions. For example, mandatory handback at termination may be embedded in underpinning administrative law principles or legislation and there may be mandatory access or rights of use for third parties. In some countries (such as France), ownership will sit with the Contracting Authority throughout the duration of the contract, with assets built on such land automatically becoming Contracting Authority property as soon as they are built and handed back for free at natural expiry. The PPP contract will set out the specific accompanying detail about asset condition and cooperation obligations, taking into account the underlying mandatory law provisions. Typically, in a common law jurisdiction, the Private Partner will have been leased the PPP project land by the Contracting Authority (and may have been permitted to sub-lease it to the relevant sub-contractors). The headlease to the Private Partner is usually coterminous with the PPP contract, so the land will revert to the Contracting Authority at the same time as the PPP project asset. In civil law jurisdictions, the PPP project land may have been made available through an administrative contract such as a "land concession" or other precarious right of use and is land within the public domain.

APPENDIX C:

Water Distribution PPP Risk Allocation Matrix

PPP RISK ALLOCATION MATRIX: WATER DISTRIBUTION

PURPOSE OF MATRIX	**This appendix contains a matrix of risks typically found in a water distribution PPP transaction, together with guidance on how those risks are typically allocated between the government Contracting Authority and the Private Partner, the rationale for such risk allocation, mitigation measures and possible government support arrangements. It aims to provide governments (and, additionally, private sector stakeholders) with targeted guidance on the appropriate allocation of project risks in a PPP contract.**
CAUTIONARY NOTE	**This matrix contains an indicative – but not exhaustive – list of the main risks typically to be considered in water distribution PPP projects and their typical allocation between the Contracting Authority and the Private Partner. It may be used as a starting point for understanding the risk allocation issues commonly arising in water distribution projects and for developing an individual risk matrix for the project in question. A project's individual circumstances and its jurisdiction will influence the appropriate contractual risk allocation and there may be additional risks that need to be considered.** See *Detailed Risk Identification and Analysis in the Introduction*.

TYPE OF PROJECT AND SCOPE CONSIDERATIONS	This matrix addresses the common risks for the rehabilitation, finance, operation, maintenance and re-transfer to the Contracting Authority (at the end of the PPP contract) of an existing water distribution system (and, subject to the project model, delivering water to end users and collecting associated water tariff payments). Scope may include associated infrastructure, such as pump stations and connections to water treatment and supply facilities. Water tariffs are payable by end users, and the Contracting Authority will sometimes include a requirement to set up and/or manage the water tariff collection system. A pure distribution project may be structured on an availability-based model (e.g. on a point to point basis excluding delivery to end users). However, if the Contracting Authority wants the Private Partner also to be responsible for delivery of water to third party users and collection of associated water tariff payments (and for project revenues to be generated primarily through such tariff revenues), the project will typically be structured as a concession model. The concession model may be the more appropriate choice for a Contracting Authority to achieve desired improvements in the water network. This is because water projects typically require substantial capital investment and the scale of rehabilitation required may only emerge over time if most of the assets are underground. Fixing pricing upfront on an availability basis may be difficult when it is hard to assess existing asset condition underground, whereas operating as a whole business may give the Private Partner the flexibility and incentive needed to invest in maintaining the capital assets and improving revenue collection (which can be a challenge for Contracting Authorities in some jurisdictions if, for example, users are accustomed to water being free or collection not being enforced). To the extent there is no existing infrastructure in place, the scope of a new project would include design and build elements – for this purpose the matrix includes certain construction-related aspects (for example, in relation to land).
ASSUMPTIONS	The Private Partner finances the development of the rehabilitated water distribution system and only starts to receive payment (from the Contracting Authority or users, according to the project model) once the water distribution system is in operation. The Contracting Authority owns and operates the existing water distribution network which is being rehabilitated (or in which the rehabilitated distribution system is integrated) and is the sole supplier of water into the distribution network. Under a concession model, the Private Partner is also responsible for delivering water to end users and collecting associated water tariff payments (and the tariff is set under the concession contract). Under an availability model, the Contracting Authority either takes re-delivery of the water once it has been transported through the network or arranges for delivery to other state-owned entities or third party users. The Private Party is responsible solely for the operation and maintenance of the distribution network and deals solely with the Contracting Authority (except to the extent it is under an obligation to establish and/or manage a tariff collection system involving end user contact). It does not bear revenue risk. No or limited land acquisition is required as the project involves the rehabilitation of an existing system, although provision of land access to undertake rehabilitation works will need to be considered.
MARKET APPROACHES	The concession model structure is more common for a water distribution PPP contract for the reasons outlined above. *See Type of Project and Scope Considerations.* Many jurisdictions have a nationally overarching regulated water market which incorporates a licensing and tariff setting regime. In addition to rehabilitation, PPP projects may involve new build/extension and/or a combination of all these elements. As an alternative to PPP structures, there are other contractual structures and procurement models that Contracting Authorities can use to deliver water distribution infrastructure with private sector involvement. These include more traditional procurement of certain elements of the network, or privatising and regulating the water market through a licensing and tariff regime under an independent regulator. The risks addressed in this matrix and much of the risk allocation guidance will be relevant to different contractual structures and procurement models, but will need to be adapted appropriately taking into account the scope and duration of the relevant contract and financing methods (such as whether there is a need for long term third party lending and how the pricing mechanism works).
PROJECT REVENUES, INCLUDING PAYMENT MECHANISMS	Under a concession model the Private Partner is effectively granted the right to operate the water distribution and delivery business for the concession term. Project revenues are generated through water tariffs paid by users for water delivered to them. The Private Partner collects water tariff payments, which will typically be set under the concession agreement (unless there is an overarching regulated market with an independent regulator, in which case water businesses are typically granted licences to operate and tariff-fixing is dealt with under that regulated regime – this matrix does not contemplate this form of regulated regime and associated regulated pricing mechanisms). Subject to any minimum revenue support and the conditions of the concession

	granted, the Private Partner will bear demand and revenue risk. Water tariffs are typically set according to a formula which takes into account capital costs and efficiency levels and are adjusted periodically. The cost consequences of certain risks in this matrix will feed through to elements of the tariff formula and therefore may not be expressed or allocated contractually in the way described for an availability model. Due to political and affordability-related concerns, water tariffs may be set at a level below cost-recovery and consequently some form of government subsidy is likely to be required to be viable. This may be in the form of a minimum revenue guarantee or maintenance/rehabilitation cost subsidy, depending on the project model. Under an availability model, project revenues are generated through availability payments by the Contracting Authority under the PPP contract. The payment mechanism will comprise a combination of availability payment by the Contracting Authority as well as a performance-based payments and sanctions system based on performance standards such as leakage reduction, quality, availability and volume of water distributed.
KEY RISKS	**Existing system condition:** The condition of the system to be rehabilitated may be challenging for the Private Partner to fully assess and price and so the Contracting Authority may have to retain some risks related to unforeseen circumstances. Similarly, the condition of the existing assets may be so poor that the Contracting Authority needs to bear some risk as regards rehabilitation/maintenance. *See Existing asset condition under Land availability, access and site risk, Construction risk and Operating risk.* **Environmental/social risk:** The impact of rehabilitating the water distribution system on local habitat, (social) infrastructure and communities generally, as well as on adjacent properties and industries, must be carefully assessed and managed by the parties. Contamination of a water distribution system will affect the morbidity and mortality rates of users, and increases to water bills may cause social unrest so operational and social risks are closely related. The involvement of the private sector in water distribution/delivery can be perceived negatively by the public, increasing the risk of opposition to the project. *See Environmental risk and Social risk*. **Completion/operation commencement risk:** Completion of rehabilitation works on time and on budget will be a particular challenge for the Private Partner in difficult underground terrain and if unanticipated asset condition issues emerge. This will increase the Private Partner's costs and adversely affect its revenues with a knock-on effect on its on-going works programme and availability of the network. Staged completion dates are likely in a rehabilitation water distribution project, as further described below. *See Staged operation commencement and Cost overruns and Works completion delays under Construction risk.* **Access to site:** Obtaining access to relevant parts of the distribution network to carry out rehabilitation works may be difficult and costly depending where it is located – for example, if it is under or crosses other infrastructure (such as a road or other utility pipes) or under or across private property. *See Access to the site and associated infrastructure under Land availability, access and site risk.* **Tariff setting and revenue collection:** In the concession model, the Private Partner bears the primary risk of collecting water payments. Enforcing payment can be difficult depending on user demographic and expectation, as well as political will to support enforcement, and this can be exacerbated by unpopular tariff increases. New or enhanced systems for measuring delivery/usage and billing may also take time to implement. *See Environmental risk and Social risk and Demand risk*.
OTHER CONSIDERATIONS	**Staged operation commencement:** Given the nature of an existing water distribution network, it is likely that the Private Partner will be operating the asset at the same time as carrying out its rehabilitation programme. Consideration on the phasing of works, so that strengthening of tariff collection coincides with improving levels of service, rather than disruption of service which can lead to public dissatisfaction and protest, is important. *See also Environmental risk and Social risk.* It should also enable the Private Partner to generate some revenue immediately (subject to the level of rehabilitation required and the system design) under both the availability and concession models, with appropriate price/tariff adjustments to cater for the level of service being provided before, during and after the relevant works. This can help increase cash flow during the overall rehabilitation and operation process, reduce the Private Partner's financing costs and incentivize the phasing of construction/rehabilitation works in order to ensure critical components are completed in a timely way. If there are significant components of the project that need to be completed or areas to be rehabilitated, the Contracting Authority may want to tie the Private Partner to particular milestone dates or a particular programming schedule. This may increase the complexity of the rehabilitation programme, limit the Private Partner's ability to mitigate delays and/or have agreed damages attached to them, which can increase the risk to the Private Partner.
PRIVATE SECTOR RISK MITIGATION	**Allocation of risks to sub-contractors:** See *Risk Allocation in PPP contracts in the Introduction* and *Cost overruns and Works completion delays under Construction risk*. As regards rehabilitation, the Private Partner will often enter into a lump sum construction contract with a construction sub-contractor to pass down its obligations under the PPP contract and to manage the risk of cost overruns and delays (subject to certain relief to which the sub-contractor will be entitled under the sub-contract). The Private Partner will bear the risk of liability caps agreed under the sub-contract being reached or warranty periods under the sub-contract being shorter than the Private Partner's defect rectification obligations towards the Contracting Authority. The Private Partner will similarly typically enter into an agreed price operating sub-contract with an operating sub-contractor to pass down its operating phase obligations to the extent practicable. **Financing:** As the Private Partner may be able to generate revenue at the same time as carrying out rehabilitation works, it may be able to reduce its upfront financing costs and obtain financing on enhanced terms as the project develops. In a concession model it should ensure it has analyzed existing and potential water demand. **Insurance:** *See Risk Allocation in PPP contracts in the Introduction*. **Effective implementation of social and environmental management plan:** *See Environmental risk and Social risk*. **Additional equity and other funding support:** *See Market Conditions in the Introduction*.
PUBLIC SECTOR RISK MITIGATION	**Carrying out detailed feasibility, ground and existing asset condition surveys:** See *PPP Project Preparation and Delivery in the Introduction*. Detailed surveys should be carried out where practicable so that the Contracting Authority understands the risks facing the project. Where such information is provided to bidders to rely on in pricing their bids, Contracting Authorities may elect to guarantee accuracy but not necessarily completeness or interpretation – this will depend on project-specific factors including the experience of the bidders and the ability to obtain other relevant information. The Contracting Authority should ensure it has commissioned and analyzed demand forecasts for water in the area potentially served by the distribution network.
	Running an efficient and fair procurement process: *See PPP Project Preparation and Delivery in the Introduction.* Enacting enabling legislation and complying with domestic procurement laws in relation to the project are primarily the Contracting Authority's risk and responsibility. As the Private Partner will be affected by the consequences of breach of such legislation, it will

	carry out due diligence itself on these matters. Interference with the tender process and other issues attributable to the Private Partner will remain a Private Partner risk.
	Timely consultation on social and environmental impact: It is key for the Contracting Authority to consider the effect of the project on people, wildlife and habitat and to implement effective management of stakeholder interests and public perception before and (in conjunction with the Private Partner) during the project. *See Environmental risk and Social risk.*
	Having competent advisers: *See Detailed Risk Identification and Analysis in the Introduction*.
	Timely involvement of internal stakeholders and contract management team: *See Detailed Risk Identification and Analysis in the Introduction*.
	Careful assessment and quantification of risk: *See Detailed Risk Identification and Analysis in the Introduction.*
	Taking performance security: The Contracting Authority may seek certain security direct from the Private Partner and its sub-contractors, or their parent companies, in respect of certain contractual (or tender) obligations. This may be in the form of bid bonds during the tender stage and, following the tender stage, completion bonds, performance bonds and guarantees. As an alternative, cash reserving mechanisms could be used during the life of the contract. Although the Contracting Authority may be able to call on this security in certain circumstances (such as performance failures by the Private Partner), the security will have a cost attached. This will feed through to pricing and may affect value for money, particularly since the security may never be called.
PUBLIC SECTOR SUPPORT MEASURES	The Contracting Authority may provide certain financial support to the project, in terms of subsidies or guarantees, although the consequences of such commitments and the potential liabilities for the public sector should be carefully considered, including how such support may dilute the risk/reward distribution under the PPP contract and affect value for money. Where the Contracting Authority's own credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in projects where the Contracting Authority is not part of central government or it is a local authority. To mitigate this Contracting Authority counterparty risk, a sovereign or central government (e.g. finance ministry) guarantee (or equivalent support) may be needed, though the full implication for the public sector should be carefully assessed, including the potential impact on the government's contingent liabilities and fiscal sustainability. *See Demand risk, Project Revenues, Including Payment Mechanisms above and Strength of Contracting Authority payment covenant under Early termination risk*.

KEY TO MATRIX

Risk category rows		Broadly, the first row of a particular risk category summarises the risk and its main allocation. The subsequent rows detail specific issues relevant to that risk and its allocation.
Risk allocation symbols	●	Indicates how the main risk described in the relevant row is typically allocated.
	[●]	Indicates how the risk (or part of the risk) may be allocated differently in the particular additional circumstances described.
Defined terms		Certain terms used in the matrix are defined in the Glossary. For example, the terms compensation event and relief event are used throughout this matrix with respect to how a PPP contract addresses the eventuation of certain risks. For a detailed explanation of those contractual mechanisms, refer to the definition of compensation event and relief event in the Glossary.
References to "construction"		These should be read to include "rehabilitation" where applicable.

SUMMARY MATRIX[1]

RISK CATEGORY	DESCRIPTION	BASIC RISK ALLOCATION		
		Public	Shared	Private
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.	●		
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.	●	●	
ENVIRONMENTAL RISK	The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.		●	●
DESIGN RISK	The risk that the project design is not suitable for the purpose required; approval of design; and changes.			●
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.			●
VARIATIONS RISK	The risk of changes requested by either party to the service which affect construction or operation.		●	
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.			●
DEMAND RISK	The risk of user levels being different to forecast levels; the consequences for revenue and costs; and government support measures.	●	●	●
FINANCIAL MARKETS RISK	The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.		●	
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.		●	●
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.		●	
FORCE MAJEURE RISK	The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.		●	
MAGA RISK	The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.	●		
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.	●		
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.		●	
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.			●

[1] Cautionary note: The summary matrix identifies typical risk allocation on an aggregated basis. For each risk allocation, however, there are generally exceptions. For the full discussion on typical risk allocation arrangements, please see the detailed guidance provided in the matrix below.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Provision of required land – general**	●	[●]		In a rehabilitation project, there may be no requirement for other land to be available apart from the site to be rehabilitated. However, this will depend on the scope of the project. Although other land may not be required, the Contracting Authority will be typically be required to grant the Private Partner all land rights it requires to implement the project and to facilitate access to the distribution network, and so will need to ensure that it has these rights in order to grant them. (*See Access to the site and associated infrastructure below.)* If other land is identified as being needed, the Contracting Authority may bear the risk of acquiring the required land interests for the project, whether through compulsory acquisition/expropriation or other powers, because it has powers to do so which the Private Partner does not. It is also in the Contracting Authority's interest because on expiry of the contract the asset will typically revert to public ownership and operation (and/or the contract will be subsequently re-tendered). The Contracting Authority is generally responsible for providing a "clean" accessible site, with no restrictive land title issues. *See also Access to the site and associated infrastructure under Land availability, access and site risk.* During the feasibility stage (see *PPP Project Preparation and Delivery in the Introduction*), the Contracting Authority should undertake detailed assessments as regards ownership of the relevant land and ensure that it has a complete understanding of the risks involved in acquiring/accessing the site and those that will affect the rehabilitation and operation of the distribution system. This includes assessing how much of the distribution network infrastructure is undergrounded and the associated risks. Such information should be disclosed to bidders as part of the bidding process. This includes consideration of matters such as rights of way, covenants affecting use or disposal and historic encroachment issues that may encumber the land, as well as how the Contracting Authority is addressing such issues and the extent to which bidders are required to price certain risks. Reinstatement requirements must also be considered. To the extent the Private Partner has relied on information provided and priced any such risks, it will share in those risks provided that the information relied on was accurate. Some Contracting Authorities will guarantee only correctness of data provided, not completeness or interpretation. If the Contracting Authority needs to use its legislative powers to acquire land for any part of the site (e.g. through compulsory acquisition/expropriation), this may increase social risk and other opposition to the project (e.g. due to delay caused by court cases). *See also Social risk.*	In certain markets, land rights (in particular reliable utilities records, and land charges and third party rights to (access) land) may be less clear than in other markets where established land registries and utility records exist and risks can be mitigated with appropriate due diligence. Where reliable information is not available, this will increase the risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risk as the Private Partner will not be able to bear them. The rights of private landowners against compulsory acquisition/expropriation might be stronger in developed markets, so the Contracting Authority may need to allow more time to acquire any new land. Rights to cross third party land may be required in order to access the existing pipe network.
	Timing of provision of required land	●			**Acquisition pre-signature:** To the extent any land is needed as part of the rehabilitation project, the Contracting Authority should complete the process of land acquisition before the contract is awarded so that all issues and risks are known and managed. All relevant processes will need to be carried out in a timely manner. The timeframe will depend on the issues affecting the site and the applicable processes. The risk that all necessary processes have been satisfied will be the Contracting Authority's risk.	
		●			**Acquisition post-signature:** If the Contracting Authority is not able to provide the land by contract award, it will bear the risk of providing it in accordance with a contractually agreed programme. Failure to obtain the land by a certain date may entitle the Private Partner to terminate the contract *(see also MAGA risk)*.	
	Provision of permanent additional land	●			**Identification pre-signature:** If a permanent need for additional land is identified and agreed by the parties before contract signature then the associated risk is usually treated in the same way as the original land. Usually the Contracting Authority will bear the risk of acquiring/providing the additional land, unless the need for additional land is specific to a bidder (for example, due to a different design).	
				●	**Identification post-signature:** If a permanent need for additional land is only identified after contract	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					signature then this will be a Private Partner risk as the need should have been identified and factored in to the Private Partner's bid. The Contracting Authority may however find it needs to provide assistance with acquisition where the land is essential, with costs being borne by the Private Partner.	
	Provision of temporary additional land	●		[●]	**Identification pre-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during rehabilitation works) are identified in the procurement phase and are common to all bidders, then the associated risk is usually treated in the same way as the original land. Usually the Contracting Authority will bear the risk of acquiring/providing such land, unless the need for such land is specific to a bidder (for example, due to its construction methods and equipment) – in which case the risk should be allocated to that bidder and the cost factored into its bid price. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
				●	**Identification post-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during rehabilitation) are identified, they should be a Private Partner risk as such need should have been identified and factored into the Private Partner's bid. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
	Heritage / indigenous land rights	●		[●]	Land rights issues involving indigenous groups will be the responsibility of the Contracting Authority. The Private Partner will bear the risk of complying with legislation and contractual obligations imposed on it in this regard. The Private Partner's obligations with regard to indigenous rights is well legislated for in some markets. In the absence of legislation, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project (e.g. compatible with the Equator Principles). This will be particularly relevant if international financing options are desirable. *See also Social risk.*	This issue is coming under increasing focus from multilateral agencies and other finance parties, as well as civil society and human rights organisations. For example, the World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects it is to finance. Many finance parties (including commercial finance parties) adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). Examples of specific legislation are native title legislation in Australia and the equivalent First Nations law in Canada. These include a requirement to seek consent from the indigenous parties affected and to enter into indigenous land use agreements.
	Resettlement				*See Resettlement under Social risk.*	
	Suitability of land		●		**General:** The risk that the land is not suitable is typically shared as the Contracting Authority may provide access to the existing network and be able to secure the availability of any new distribution areas, but the suitability of the allocated access may be dependent on the Private Partner's design and rehabilitation plan. This will apply to both underground and overground suitability, to the extent the network is (or is planned to be) above or below ground. *See also Design risk.*	
		●		[●]	**Underground:** In projects where most of the existing network is underground, data may be available. However, if no or unreliable data is available and the risk cannot be transferred (or transferring the risk does not represent value for money), risk with regard to stability and suitability of the underground may sit with the Contracting Authority. To the extent reliable data is available in the tender phase and can be relied upon by the Private Partner, the risk sits with the Private Partner. The importance of this risk may	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					depend on the extent to which the Contracting Authority's specification and Private Partner's solution requires extension of the network into new areas. *See also Site condition under Land availability, access and site risk.*	
	Key planning consents	●			**Pre-signature:** In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents. As the water distribution network already exists, fewer consents may be necessary than for a new build project. This will depend on the scope of the rehabilitation and consents to access the system to be rehabilitated may be required.	Some markets (particularly regulated markets) may require certain licences and consents to be obtained, in order to rehabilitate and operate a water distribution system (e.g. in relation to water supply, construction and operation of the system and environmental permits). In some jurisdictions, it may not be possible to obtain the requisite planning consents until such time as the Private Partner has been identified and/or detailed design is known.
		●		[●]	**Post-signature:** If consents for key permits are not obtained before contract signature and the Contracting Authority wants to sign the contract, it will typically bear the risk of the consents being delayed or not obtained (subject to the Private Partner complying with any reasonable requirements) – this may be treated as a compensation event. Failure by the Contracting Authority to obtain the consents by a certain date is likely to entitle the Private Partner to terminate the contract. Permit risk may be complicated further if there are different levels of authorities involved, and interaction between levels of design and authorisations may impact the timeline. If the risk of non-availability is too great, this may deter some investors and financiers from engaging in or continuing in the bid process. *See also MAGA risk, Design risk and Environmental risk.*	
	Subsequent planning approvals	[●]		●	Obtaining subsequent detailed planning consent and other approvals will be a Private Partner risk. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also Environmental risk and MAGA risk.*	
	Access to the site and associated infrastructure	●			Obtaining access to relevant parts of the distribution network to carry out rehabilitation works may be difficult and costly depending where it is located – for example, if it is under or crosses other infrastructure (such as a road or other utility pipes) or under or across private property. The Contracting Authority will typically be required to grant the Private Partner all land rights it requires to implement the project. Failure to provide access may be treated as a compensation event. *See also MAGA risk.* The Private Partner will be responsible for assessing the adequacy of the land rights granted (including any associated easements and access rights in relation to third party land). The Contracting Authority will then be responsible for ensuring the Private Party has these rights, whether by way of legislation/statutory powers or through contract. If the risk of non-availability of land access is too great, this may deter some investors and financiers from engaging in or continuing in the bid process.	Third party rights to (access) land may not be easily identifiable in some jurisdictions, increasing risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risks.
	Site security	●		●	**Construction phase/operation phase:** Risk allocation with respect to site security will depend on the political climate, opposition to the project, nature of the risk and the stage of the project. Parties should aim to have a complete understanding of the risks involved in physically securing the site and those that will affect the rehabilitation and operation of the distribution system. Ordinarily the Private Partner will be responsible for day to day site security. However, the Contracting Authority may need to use statutory means to properly secure the site for the Private Partner (such as police involvement or eviction) and in some circumstances may be required to provide additional site security / assistance during operations to manage this risk. Failure may be treated as a compensation or MAGA event. *See also Force majeure risk, MAGA risk, Social risk and Vandalism under Construction risk and Operating risk.*	For example, where there is public opposition to the distribution system (for example, on environmental grounds), there may be protestor action, or there may be issues safeguarding the equipment and installation.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Utilities and installations	[●]		●	**Costs or delays caused by relocation/diversion of utilities:** To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of any costs or delays caused by statutory undertakers and utility providers in carrying out diversions or relocations. Costs and delays caused by re-location or diversion of existing utilities which are due to the Private Partner's design or construction plan are usually allocated to the Private Partner. For connections to existing infrastructure, *see Project management and interface with other works/facilities under Construction risk.* The Contracting Authority will bear risk if no reliable information is available. It will also bear risk to the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate. Lack of data on existing utilities location can make it difficult for the Private Partner to assess (and price) the cost and time needed for relocation which can impact on the rehabilitation timetable and ultimately on meeting relevant operation commencement dates. If the Private Partner bears this risk, the Contracting Authority may need to share the risk by capping the Private Partner's liability or by having a cost sharing mechanism. Where existing utilities will remain in place at or in the vicinity of the site, the Private Party may be required (or wish) to enter into crossing agreements or proximity agreements with the owners of the relevant utilities.	In some markets or challenging locations, there may be little data on location of utilities (sewage, oil, gas, optical fibre etc) and the Private Partner may be unable to accept all or part of this risk. In markets where the utility provider is a private entity, this risk is likely to be treated as a relief event (and the utility company will bear the risk) – this is common in mature markets. In less mature markets, particularly where the utility provider is a state-owned entity, the risk is likely to be allocated to the Contracting Authority as a compensation or MAGA event.
		[●]	●		**Costs or delays caused by utility provider:** Costs and delays caused by a utility provider could arise in both phases and the risk will be allocated according to the relevant circumstances, market and ownership of the utility. The risk could be shared or allocated to the Contracting Authority	
	Site condition	[●]		●	**Surveyed:** The Contracting Authority usually undertakes detailed geotechnical and ground/soil surveys during the feasibility stage (if not already publicly available) and discloses such information as part of the bidding process. Sharing the surveys will save bidders' costs (all which would otherwise feed through to the Contacting Authority in the contract price). To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of such conditions causing cost and delay. The Contracting Authority will bear risk to the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation of the data.	In a mature market, the Contracting Authority normally hands over the site to the Private Partner in an "as-is" condition on the basis of the surveys provided. The Private Partner can rely on the surveys but otherwise bears the risk. In some markets, the bidders carry out the surveys during the tender process – this may be the best solution in some circumstances, but may also limit competition unless bidders are compensated for these costs.
		●	[●]		**Unsurveyed:** Where it is not possible to fully survey site condition prior to award (e.g. in high density urban areas or underground), the risk for unsurveyable land will be allocated to the Contracting Authority (e.g. as a compensation event). The risk may be shared by the Private Partner (e.g. as a relief event) in some circumstances, for example where the risks were within the knowledge of the Private Partner when it priced its bid or an experienced contractor would have considered their existence as being possible. The impact on the project and the cost of remediation works for certain existing site conditions can be significant so the ultimate risk allocation will depend on the project specifics.	In some markets there may be less historic data available to the parties to assess risk. It may however be easier to perform comprehensive surveys in a less urban area.
		●	[●]		**Cultural / Archaeological finds:** Discovery of artefacts can cause delays and costs as there may be legal or other requirements in relation to reporting them and permitting archaeological study. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk. One approach is to share the risk such that the Private Partner bears the risk in respect of designated areas (such as a low risk area) and the Contracting Authority bears the risk outside such areas (such as a high risk area). Another approach is for the Private Partner to be obliged to coordinate work, but for the Contracting Authority to appoint specialised contractors and to	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of finds is often treated as a relief event.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					bear cost/delay and interface risk.	
		●	[●]		**Unexploded bombs, land mines and other munitions:** Discovery of munitions can cause delays and costs as they will need to be defused and removed. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk.	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of munitions risk is often treated as a relief event. In some countries, the risk of unexploded land mines can be high and specific surveying and cost provisions may need to be agreed.
		●		[●]	**Pre-existing environmental pollution:** Pre-existing pollution is typically the Contracting Authority's risk except to the extent it was known to and priced by the Private Partner. The impact of rehabilitating the water distribution system on communities must be carefully assessed and managed by the parties as contamination of a water distribution system will affect the morbidity and mortality rates of users. Remediation works for certain existing environmental conditions can be expensive so the ultimate risk allocation will depend on the project specifics and the surveys provided to the Private Partner. Existing environmental conditions which cannot be adequately catered for or priced may to be retained by the Contracting Authority. *See also Environmental risk and Change in law risk.*	
	Existing asset condition	[●]		●	Where the project is to rehabilitate existing assets, where practical, they should be fully surveyed (and potentially warranted) by the Contracting Authority. To the extent reliable data relating to the condition of existing assets is shared by the Contracting Authority during the tender process and can be relied upon during implementation, the Private Partner can price the risk of using them, including the interface with other aspects of the project and latent defect risks. The Private Partner will then bear the corresponding risk. The Contracting Authority will bear risk to the extent such data proves inaccurate or insufficient, and to the extent of any warranties it provides. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation. This is a key risk in a water distribution rehabilitation project as the condition of the system to be rehabilitated may be challenging for the Private Partner to fully assess and price. There may need to be a mechanism for the Contracting Authority to support rehabilitation and maintenance costs to a certain level if the project is likely to be financially unviable for the Private Partner otherwise. *See also Suitability of design under Design risk, Project management and interface with other works/facilities under Construction risk and Maintenance standards under Operating risk.*	Some water projects have proved financially unviable for the private sector due to the state of disrepair and high maintenance costs of the existing distribution network.
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.*	**Community and businesses**	●	●		Ultimately, the policy relating to the social impact of the provision of infrastructure is for the government. The Contracting Authority will bear this risk except to the extent the Private Partner is responsible for implementing any social management measures. During the feasibility stage, the Contracting Authority should have considered the impact on habitat, (social) infrastructure and communities generally, as well as on adjacent properties and industries – both in terms of the rehabilitation and ongoing operation and maintenance of the distribution system. It may need to carry out social impact studies and aim to minimise any negative impact of the project. Contamination of a water distribution system will affect the morbidity and mortality rates of users, and increases to water bills may cause social unrest so operational and social risks are closely related. Private sector involvement in the delivery of water can face strong public resistance where there is a perception that water should be provided by the public sector and tariffs not necessarily charged or enforced. Consultation may reduce the risk of opposition if outcomes are incorporated in the strategy and tender requirements. The approach, compensation schemes and what is acceptable should be addressed in the bid requirements and the contract. Investors and lenders may expect to see a plan addressing social impact, including the execution of any necessary contractual arrangements.	This issue is coming under increasing focus from multilateral agencies, development finance institutions and other international finance parties, as well as civil society and human rights organisations. Finance parties (including commercial finance parties) will look very closely at how these risks are managed at both private and public sector level. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). The World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects

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				[●]	Where the distribution system is to be underground, the social/environmental impact can be lessened by requiring the Private Partner to reinstate the environment above the pipeline once completed and to allow reuse of the affected land to the extent possible and safe (e.g. for grazing or nomadic use). All the way through construction and operations, active stakeholder engagement by the Contracting Authority will be critical to avoid litigation, achieve key milestones on time and ensure it is delivering infrastructure that serves its public purpose. Both the Private Partner and the Contracting Authority should develop sound environmental and social risk management plans before construction begins. Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation (*see also Resettlement under Social risk*) and continued efforts to manage the social and political impact of the project on and around the site (possibly including a compensation regime for affected businesses adjacent to the distribution system (or new pump stations) and/or including social infrastructure development in the project, e.g. extending the water system to nearby villages). The Private Partner will bear the risk of non-compliance with any contractual social risk obligations as well as social risk obligations set out in the underlying legal system, although even where social risk obligations are passed onto the Private Partner, the consequences of such risks occurring may come back to the Contracting Authority. For this reason, the Contracting Authority should critically analyse just what social risk obligations should be passed onto the Private Partner and what should be retained. Where there is public opposition, there may be protestor action in both construction and operating phases, and/or issues safeguarding the site equipment and installation. *See also Site security and Access to the site under Land availability, access and site risk, and Vandalism under Construction risk and Operating risk.* The Contracting Authority may choose to adopt internationally recognised social and environmental standards and practices for the project to manage social risk, especially if international financing options are desirable. For a detailed analysis on how governments can better address aspects related to social inclusion in the delivery of infrastructure, see the GI Hub's practical guidance on *Inclusive Infrastructure and Social Equity*.	it is to finance. In civil law jurisdictions the obligation upon the Contracting Authority to act "in the general interest" and to justify and document decisions may strengthen the stakeholder process. This is because the level of transparency and justification required should ensure that stakeholder views are properly taken into account and the risk of arbitrary decisions (and consequent challenges) reduced.
	Resettlement	●		[●]	Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation, although this may be mitigated by specific siting of the infrastructure. This may include the removal of formal and/or informal housing or businesses and resettlement of communities in another location, potentially also with compensation. In a rehabilitation project, this may be less of a risk but will depend on the scope of the project and whether the existing site has become used/occupied for other purposes prior to rehabilitation. The Private Partner is responsible for implementing any social risk management measures contractually agreed – these should be clearly specified by the Contracting Authority in the procurement phase to enable the Private Partner to price the cost and associated risks.	
	Heritage / indigenous people	●		[●]	As with land use rights involving indigenous groups, any other social impact risks involving such groups will usually be the responsibility of the Contracting Authority but the Private Partner will bear the risk of complying with relevant legislation and contractual obligations. In the absence of legislation, indigenous rights issues and community engagement may be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project, particularly if international financing options are desirable. *See also Heritage/indigenous land rights under Land availability, access and site risk.*	The Private Partner's obligations with regards to indigenous rights is well legislated for in some markets and in other markets there may be more reliance on internationally recognised standards. *See also Heritage/indigenous land rights under Land availability, access and site risk.*

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Industrial action	●	●	●	The Private Partner assumes the risk of labour disputes and strike action adversely affecting the project except to the extent such action falls into the category of political risk – the Contracting Authority may bear the risk (if a MAGA event) or share the risk (as a force majeure or relief event) for strikes and other widespread events of labour unrest. For example, nationwide and sector strikes are usually Contracting Authority risks, but strikes at the Private Partner's facilities will be a Private Partner risk. *See also Force majeure risk and MAGA risk.*	In less politically stable jurisdictions the Contracting Authority may have to accept more risk for strikes than in some jurisdictions. In markets where the risk of strikes is low, the Private Partner may be comfortable accepting this risk as a relief event.
ENVIRONMENTAL RISK *The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.*	**Pre-existing conditions**	●		[●]	*See Site condition and Existing asset condition under Land availability, access and site risk*.	Environmental scrutiny is increasing around the world. The Contracting Authority and the Private Partner must develop sound environmental and social risk management plans before construction begins. The risk of delay in obtaining approvals may be greater in some jurisdictions, particularly where different levels of government are involved. Delays in obtaining environmental permits have caused significant construction delays in some sectors (for example, in some projects in South America) and the timeframe required should not be underestimated. If adequate relief is not given to the Private Partner, this may deter the private sector from participating in new projects in the same sector or jurisdiction. International finance parties, multilateral agencies and development finance institutions are particularly sensitive about environmental and social risks. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (which are described in the Equator Principles). Finance parties will look very closely at how these risks are managed at both private and public sector level and this scrutiny is helpful to mitigate the risks posed by these issues. *See also Communities and businesses under Social risk.*
	Obtaining environmental consents	[●]		●	**Pre-signature:** In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents In many major projects, the environmental authorisations are a key component of the project and may take significant time to be prepared and approved. In some cases, these authorisations are initiated (such as preparing the environmental impact assessment) and prepared by the Contracting Authority ahead of the procurement process. At a specified point in time, the Private Partner will take over the risks related to obtaining detailed environmental licences or permits related to the project.	
		[●]		●	**Post-signature:** Except as specifically identified otherwise, the Private Partner typically bears the risk of obtaining all environmental licences, detailed permits and environmental authorisations required for the project after contract signature. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event or MAGA event. *See also MAGA risk.* In some countries, there may be different levels of governmental approval required. Local authorities may interpret certain requirements in their own way after the contract price has been submitted and impose unexpected conditions on the Private Partner. This could adversely affect the project's financial model. The parties should ensure that the contract sets out clearly how any such interpretation or unexpected requirement is addressed to avoid disputes as to which party bears the consequences. *See also Key Planning Consents under Land availability, access and site risk, Change in law risk and Compliance with environmental consents and laws under Environmental risk.*	
	Compliance with environmental consents and laws			●	The Private Partner bears the risk of complying with all environmental licences, detailed permits and environmental authorisations required for the project as well as applicable environmental laws. The parties should ensure that change in law provisions adequately address changes in (mandatory) environmental standards and laws to avoid disputes as to which party bears the consequences of any requirements imposed after contract signature. *See also Change in law risk.* In the absence of legislation, environmental obligations can be managed by the Contracting Authority through the adoption of internationally recognised standards and practices for the project, particularly if international financing options are desirable. *See also Communities and businesses under Social risk.*	
	Environmental conditions caused by the project			●	The Private Partner bears the risk of environmental events caused by the project to the extent due to its failure to comply with applicable licences, laws and contractual obligations. This includes conditions affecting both the project itself and third parties. Water leakage from distribution pipes is a particular risk in water distribution projects, with consequent risk of contamination of the water being distributed. The Contracting Authority may want to satisfy itself as to the overall robustness and suitability of environmental plans proposed by the Private Partner, to ensure that such plans will be adequate to	

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					appropriately manage the risks of the project, but the Contracting Authority should not take on any risk in doing so.	
	External environmental events		●		**Outside both parties' responsibility:** The risk of environmental events external to the project occurring which adversely affect the project (or, as a result, third parties) should be treated according to the nature and cause. They may be a form of shared risk, such as a relief event or force majeure event (e.g. if an earthquake damages key elements of the distribution network so that it cannot operate for a period).	
		●			**Within Contracting Authority's responsibility:** If environmental events are within the responsibility of the Contracting Authority or government they may be treated as a compensation event or MAGA event if they damage the distribution system (or a new substation) or lead to legal action against the project by third parties). *See also MAGA risk and Climate change event under Environmental risk.*	
	Climate change event	[●]	●		Market practice is developing with greater focus on events caused by climate change and the Contracting Authority should consider the risk and impact of climate risk events on the infrastructure (both one-off external weather events and more gradual effects, such as rising sea levels or temperatures and droughts). Water supply in a water distribution project is likely to be a particularly sensitive issue due to unpredictable weather patterns and drought. It may be appropriate to treat certain events as force majeure events if they occur beyond certain thresholds (e.g. temperatures outside certain ranges). Design resilience is also an important mitigating factor, for example, for projects with seasonal weather such as monsoon or where earthquakes are common. An alternative may be to consider a separate contractual mechanism to address these types of risks over the long term life of the contract. As with other variations required by the Contracting Authority, any changes to the project scope to mitigate climate change effects are likely to need to be funded by the Contracting Authority where the Private Partner cannot foresee such developments and has no means of passing on the cost (and no other agreement as to cost sharing is in place). As it is likely to be more costly to retrofit measures, it is essential that the Contracting Authority consider this risk during the feasibility phase, and that both parties continue to consider this issue further during the tender process. The scope for passing on costs through user tariff increases will depend on the project circumstances. *See also Force majeure risk and Operational risk.*	If clear requirements are not included, this may lead to different bidders taking this risk into account in different ways. To avoid speculation and disputes, post-contract award, these issues should be clearly set out in the tender documents and negotiated throughout the tender process.
DESIGN RISK *The risk that the project design is not suitable for the purpose required; approval of design; and changes.*	**Suitability of design**			●	Generally the Contracting Authority should aim to transfer design risk to the Private Partner but the extent to which this is possible will depend on how involved the Contracting Authority wants or needs to be in specifying design requirements in the tender documentation. Alternative approaches are described below. **Output specification:** Where possible, the Contracting Authority usually aims to set a broad output driven specification in the tender documents, requiring the Private Partner to design and rehabilitate the project in a way which satisfies the performance specifications and ensures compliance with applicable legal requirements, good industry practice standards and, where applicable, minimum quality standards. This allows for private sector innovation and efficiency gains in the design. With this approach, the Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification. A design review process during the contract will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner, but defined design standards (which may be statutorily imposed) may render such a process less important than on other projects care should be taken to ensure that the mutual review process does not reduce or limit the Private Partner's overall liability. In limiting how prescriptive it is in the performance specification, the Contracting Authority may wish to request a degree of cooperation and feedback during the bidding phase to ensure that the bidding consortia's expectations in terms of an appropriate risk allocation for design responsibility are taken into	In more developed PPP markets, the Contracting Authority typically drafts a broad output specification, unless permit or other regulatory requirements oblige it to provide more detailed and descriptive specifications. Projects in some less established PPP markets may be particularly dependent on availability of reliable resources necessary for construction and operation, which has implications for the Private Partner's ability to meet the reliability requirements in the performance specification and take full design risk. The quality of the information provided by the Contracting Authority and the Private Partner's limited ability to verify such data can hinder the Private Partner's ability to unconditionally take full design risk in some markets. Attempts to transfer the risk in such circumstances may also lead the Private Partner to price in expensive risk premiums that do not represent value for money for the Contracting

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
		[●]			account when finalizing the performance specification. If the Contracting Authority provides bidders with a basic design, bidders will typically be responsible for any errors, if they assume this basic design in developing their detailed design. An alternative is to provide (more) detailed design, but to contractually oblige the bidders to comment on and subsequently accept the (amended) design. The Contracting Authority should bear the risk of technical information provided by it proving inaccurate to the extent the Private Partner was allowed to rely on it for design purposes (e.g. inaccurate site condition or existing asset surveys). *See also Changes to design under Design risk.*	Authority.
		●			**Prescriptive specification:** A prescriptive specification can, where essential, ensure the Contracting Authority receives bids on a particular (and similar) basis. However, the disadvantage of this approach is that it will restrict private sector innovation and efficiency gains in the design and may not result in best value for money. The Contracting Authority may also retain some design risk in certain aspects of the system or related works, if it is more prescriptive in the performance specification. For example, if the performance specification is too prescriptive, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted and the Contracting Authority will to that extent share in the design risk. The prescriptiveness of the performance specification is likely to be dependent on the depth of the feasibility study. Some jurisdictions allow only limited room for individual design, since all key aspects and many details are already fixed in the official planning approval decision. If the Private Partner wants to deviate from these requirements it must conduct formal amendment procedures, which in practice have such process and risk impact that bidders are not willing to take the risk that comes with initiating such amendment procedures. *See also Changes to design under Design risk.*	
		[●]			**Existing infrastructure:** As the project involves an existing water distribution system, the Private Partner's ability to warrant the fitness for purpose of its design solution must be considered – it may not be able to warrant defects in the existing infrastructure which may impact the project's performance and the Contracting Authority may have to bear this risk. The Contracting Authority will retain the design risk to the extent that the design is dependent on interconnections for which the Contracting Authority retains responsibility, such as the raw water supply connection points and raw water quantity and quality, and on the stated condition of the existing assets.	
	Approval of designs	[●]		●	The Private Partner will bear the risk of obtaining design approvals as it will have principal responsibility for preparing the detailed design and obtaining relevant approvals from the appropriate state or other body. However, if the Private Partner has complied with all relevant conditions and time frames, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also MAGA risk.* Where specific solutions or consultants are imposed by the Contracting Authority (e.g. technical), some risk may remain with the Contracting Authority.	
	Changes to design	●		●	The risk of changes to design after contract signature is allocated according to the reason for the change. If the original design is deficient, this will be a Private Partner risk, subject to the aspects which are the Contracting Authority's risk (as outlined in *Approval of designs and Suitability of design under Design risk)*. If changes are required by the Contracting Authority, this would as a rule be a Contracting Authority risk (with the consequent time and cost implications borne by the Contracting Authority on the same principles as for compensation events). *See also Variations risk.* Contractual amendment procedures can in practice have such process and risk impact that the Private	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Partner may not be willing to take the risk that comes with initiating such amendment procedures. Requesting design changes or alternative or more detailed design development during the procurement stage will delay the procurement timetable and cause bidders to incur additional costs. The lack of certainty and potential cost may deter bidders and, depending on the change in requirements, may result in the procurement process needing to be re-run to comply with procurement laws or risk later challenge.	
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.*	**Cost overruns**	[●]	[●]	●	Cost overruns (i.e. costs exceeding the rehabilitation costs assumed in the project's financial model) can have a variety of causes, such as mistakes in rehabilitation cost estimates, increased cost of materials, actions of the Contracting Authority or government, variations, as well as delays in – or mitigating potential delays in – the rehabilitation programme. In a rehabilitation project, the discovery of existing assets being in a worse state of repair than anticipated can significantly increase costs. The Private Partner typically assumes the risk of cost overruns to the extent these are not caused by force majeure, compensation events (such as in relation to unsurveyed site or existing asset conditions) or MAGA events, and are not addressed through other bespoke provisions (e.g. Contracting Authority variations, Change in law or provisions specifically addressing exchange rate risk during construction – *see also Variations risk, Change in law risk and Exchange rate fluctuation risk under Financial markets risk)* or hardship doctrines *(see Glossary definition)* in underlying law. The Private Partner will mitigate these risks by passing them through as far as possible to its sub-contractors (for example, the construction sub-contractor) and in a concession model there may be scope for passing on some of the cost via an increased tariff (although the ability to do this may be limited). The Private Partner's financial model will typically include contingency pricing for cost overruns (as will the sub-contractor's assumptions). *See also Force majeure risk and MAGA risk.*	In certain markets, risk is considered manageable by the Private Partner through robust pass through of obligations to credible and experienced sub-contractors and by allowing appropriate timetable and budget contingency. The Private Partner can mitigate the risk of sub-contractor non-performance by obtaining appropriate security from the sub-contractors (for example, parent company guarantees and/or performance bonds). The Contracting Authority may sometimes seek additional security itself to ensure such costs can be met - see Taking performance security under Public Sector Risk Mitigation.. Enforcement of construction budgets may be easier in markets where the Private Partner will typically have more experience and reliable access to resources. Where projects involve large elements of undergrounding, this element of construction risk will be more carefully assessed by the Private Partner.
	Works completion delays	[●]	[●]	●	Delays in delivering the rehabilitated infrastructure by the relevant works completion dates can have a variety of causes, such as unavailability of construction materials, delays in shipping, variations and mistakes in programme scheduling, as well as weather events, civil unrest or industrial action and actions of the Contracting Authority or government. The Private Partner typically assumes the risk of delays to the extent they are not caused by relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or change in law). *See also Force majeure risk, MAGA risk, Variations risk and Change in law risk.* Given the nature of an existing water distribution network, it is likely that the Private Partner will be operating the asset at the same time as carrying out its rehabilitation programme. Rehabilitation works will be programmed to ensure critical components are completed in a timely way and if there are significant components of the project that need to be completed or areas to be rehabilitated, the Contracting Authority may want to tie the Private Partner to particular milestone dates or a particular programming schedule. Works will need to be evidenced as complete and water distribution projects require detailed commissioning and testing regimes to ensure that the system meets the output, water quality, efficiency and environmental requirements set under the contract and applicable legislation. To the extent the system has been suspended during the rehabilitation works (or for example where there have been contamination issues that have had to be remedied under the rehabilitation project), the Private Partner will be expected to demonstrate readiness for connection with the water supply and that the relevant parts of the water distribution network meet the minimum performance levels before being permitted to enter into operation. The consequences for the Private Partner of delays to the relevant works programme/completion dates	Enforcement of construction deadlines may be easier in markets where the Private Partner will typically have more experience and reliable access to resources. Some projects in less mature markets have faced significant construction issues and the Contracting Authority will need to be prepared to enforce its rights to manage the consequences of a failure by the Private Partner to meet the construction milestones. In less mature markets, the management of completion risk in some sectors is typically addressed by having either: (i) a scheduled completion date (with attached agreed damages for delay) followed by a fixed period for operation; or (ii) a scheduled construction period forming part of the overall contract term which is itself fixed, subject to extensions for certain events such as force majeure. With the latter scenario, the Contracting Authority may attempt to additionally impose agreed delay damages on the Private Partner. The difference between the two structures is that the former preserves the project's revenue generating operation phase and the Contracting Authority relies on the agreed delay damages to incentivise timely completion of the works and operation commencement. In the latter case, the incentive to complete the works and meet the scheduled operation commencement date is that any delay at the

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					are loss of expected revenue (from the Contracting Authority or users, as applicable to the project model) which is due to start from the relevant date and ongoing rehabilitation and financing costs. In extreme cases, there is also a risk of potential termination for failing to meet the "longstop date" (a final later date by which the Private Partner must complete the project works/commence operation to avoid the Contracting Authority being entitled to terminate). The Private Partner will pass through these risks as far as possible to its sub-contractors (and may require the sub-contractors to pay it agreed damages to compensate for the delay to and loss of its overall project income and act as an incentive for timely completion). The Contracting Authority may also consider imposing agreed delay damages on the Private Partner to compensate it for delay to the start of the operating phase. However, imposing such agreed damages will typically result in the Private Partner building additional contingency time and cost into the project's rehabilitation plan and the Private Partner should already be sufficiently incentivised to meet the relevant works completion date on time so that its revenue streams can commence. Some jurisdictions require certain criteria to be met in contractual provisions imposing delay damages if they are to be legally enforceable. Broadly speaking, if the damages exceed the Contracting Authority's likely real losses they may be seen instead as a disproportionate penalty and the provisions may be unenforceable.	Private Partner's risk will reduce the revenue-generating operating phase. This approach would need to be adapted to factor in the likely concurrent operation and rehabilitation programme in a water distribution rehabilitation project.
	Project management and interface with other works/facilities	[●]		●	**Project management:** Typically, the Private Partner assumes project management risk. The Private Partner is best placed to integrate the complex rehabilitation works, water supply connection and ongoing and long-term operation and maintenance of the project to ensure reliable service. This may be managed through a single project joint venture / consortium or by the Private Partner managing a series of works, supply and operation/commissioning contracts. The Private Partner will be expected to demonstrate the distribution system's readiness for connection with the water supply before distribution re-commences (to the extent it has been suspended during the rehabilitation works). **Interface with other works/facilities:** Interdependence with other projects may also affect contract obligations and risk allocation. If some or all of the project is dependent either on the Contracting Authority carrying out particular works or making available an existing facility, or on related infrastructure work being completed by a third party, that interface risk will be the Contracting Authority's risk. If the operation commencement date will be delayed due to such works not being carried out on time or the Contracting Authority otherwise failing to meet its obligations, this will be a compensation event or MAGA event. For example, the project may be relying on the Contracting Authority procuring new water treatment plants or upgraded connections to the water supply or pump stations. *See also MAGA risk.* If additional interconnection facilities are required for the project (such as new water supply or upgraded connections to the water supply or pump stations), construction of these additional facilities may also be included within the Private Partner's scope of responsibility, transferring the risk of delays and cost overruns in the construction to the Private Partner. Ownership and responsibility for operation and maintenance of these additional facilities may be transferred to the Contracting Authority on completion of construction and commissioning, subject to the Private Partner's defect rectification obligations during the prescribed warranty period. *See also Utilities and installations, Suitability of design under Design risk, Maintenance standards under Operating risk, Demand risk and MAGA risk.*	In some markets the Private Partner may be allocated the risk of third party work being properly and timely completed, particularly if the Private Partner has the opportunity to enter into interface arrangements with the third party. These interface agreements will result in the interface risk being shared between the Private Partner and the third party.
	Quality assurance and other construction regulatory		●		Meeting relevant quality standards will be a Private Partner risk, but where standards or codes are revised after the bid submission date this risk allocation will depend on whether the changes are mandatory and whether the Private Partner has priced the risk of such changes into its bid. The Contracting Authority may consider increasing the contract price to account for increased costs of	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	standards				compliance or the Private Partner may be excused from compliance with the new standard if it is not mandatory. This may be dealt with through the change in law provisions. *See also Change in law risk.*	
	Health and safety compliance			●	Responsibility for health and safety compliance on the construction site is typically a Private Partner responsibility. The Private Partner typically bears the risk of complying with health and safety laws/requirements and indemnifies the Contracting Authority in respect of any breach of such requirements. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority or other government entity and/or the affected party. Some projects require an annual safety review which enables the parties to assess relevant performance and safety management. Otherwise, the engagement of an experienced contractor with a strong safety record is also a mitigant.	In some jurisdictions with developed construction legislation, the Private Partner's responsibilities in the construction phase will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal obligations. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines.
	Liability for death, personal injury, property damage and third party liability			●	Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising due to the rehabilitation works. The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically the Contracting Authority will set certain minimum requirements under the PPP contract (*see also Unavailability of insurance under Financial markets risk*). The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third-party claims against it over this threshold.	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.
	Defects and defective materials			●	The Private Partner should be required to design and rehabilitate the project in accordance with good industry practice, and bears the risk and responsibility for completing the project free of defects. Defects are typically categorised as (i) visible and (ii) latent/hidden defects and are treated differently under the contract. The risk of visible defects is sometimes covered by an interim acceptance at completion of the works (and may result in a one off payment of agreed damages). As latent defects may not be noticeable for some years, the Private Partner is typically liable for such defects for a number of years following completion and the Contracting Authority may request a performance bond from the Private Partner to support this obligation (which the Private Partner will require from the relevant construction sub-contractor). The Contracting Authority may retain latent defects risk in existing structures. *See also Existing asset condition under Land availability, access and site risk and Maintenance standards under Operating risk.*	
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the rehabilitation and operation of the distribution system and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue rehabilitation and/or operation/maintenance.	
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism		[●]	●	Vandalism is not typically a risk in water distribution projects but maybe a Private Partner risk, sometimes with a threshold/cap above which the Contracting Authority will bear/ share the risk. This	Vandalism may be more of a risk in certain political climates and malicious damage may be a concern depending

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					will depend on the nature of the risk and the extent to which the Private Partner can effectively have an impact on/mitigate risk, design choice, use of materials, site access and security during rehabilitation, etc. *See also Site Security under Land availability, access and site risk and Social risk.*	also on the location and accessibility of the system.
VARIATIONS RISK *The risk of changes requested by either party to the service which affect construction or operation.*		●	[●]	●	**Contracting Authority change:** The Contracting Authority typically bears the risk and cost of variations implemented following its request. The contract will specify the extent to which it is entitled to require changes and the reasonable grounds on which the Private Partner may refuse. The Contracting Authority will also bear the risk of ensuring it can meet its cost liabilities. **Private Partner change:** The Private Partner will bear the risk and cost of variations implemented following its request, unless the parties have agreed a sharing mechanic as part of their discussions of the change. A sharing mechanic may be appropriate where the Contracting Authority wants to incentivise the Private Partner to introduce innovative or environmentally-friendly solutions. If the Contracting Authority is liable for costs, it should mitigate its risk by requiring a transparent costing review process, which it can due diligence. This is likely to be particularly a concern during the construction phase. As with any potential liabilities under the PPP contract, the Contracting Authority will want to consider how best it can fund such payments (e.g. through financing the variation direct itself, requiring the Private Partners to procure committed but undrawn funding at financial close or to establish a reserve to fund future variations, each of which will come at a cost and may affect value for money, or requiring the Private Partner to procure financing at the time of implementation of the variation. Where financing is procured by the Private Partner, whether at financial close or at the time of implementation, the Private Partner's revenues will need to be adjusted to fund repayment of the financing. The risk and cost associated with changes arising due to other provisions will be addressed according to those provisions. *See also Changes to design under Design risk, Cost overruns and Works completion delays under Construction Risk, Increased operating costs and affected performance under Operating risk, Climate change event under Environmental risk, Disruptive technology risk and Change in law risk.*	Some jurisdictions have detailed change protocol templates to follow for variations to ensure that costing is fair and transparent. Due to the impact changes can have on rehabilitation or operation (e.g. in terms of timing, cost and delivery), there may be restrictions placed on the ability to request changes of certain types or in certain phases. The Contracting Authority's ability to request and meet any changes costs will also be a concern, particularly where it has a weak credit. Some contracts may contain a variation clause to provide for both parties to propose variations to the minimum functional specification, in particular where this may deliver public health and water efficiency benefits.
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.*	**Increased operating costs and affected performance**	[●]	[●]	●	Increased costs and delays in the operating phase can have a variety of causes, ranging from mistakes in maintenance cost estimates or variations to extreme weather events. Aside from adjustments for inflation, the Private Partner broadly assumes the risk of events which inhibit performance and/or give rise to cost increases beyond modelled costs, to the extent these are not relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or changes in law) or hardship doctrines *(see Glossary definition)* in underlying law. *See also Variations risk, Change in law risk, Force majeure risk and MAGA risk.*	
	Performance/ price risk	●		●	The Private Partner bears the risk of meeting the performance specification under the contract (i.e. by ensuring that the works and the operational performance of the water distribution network are of the necessary quality and level and that it is ready to take and distribute water when required). In an availability based payment structure the Private Partner's payment may be subject to abatement if availability criteria and performance-based standards are not met. For example, availability criteria may be linked to the system being able to distribute certain water quality, flow and volume measured against pre-determined schedules or standards. Performance monitoring also enables the Contracting Authority to monitor service levels generally and potentially to receive early warning of matters requiring improvement or remediation. Where certain availability criteria (or performance indicators) cannot be met due to actions by the Contracting Authority (or other government entities) or unforeseen circumstances, the Private Partner may be entitled to relief (e.g. if caused by a relief, force majeure, MAGA or compensation event). For example, if civil unrest damages the distribution system this may be a MAGA event. The Contracting Authority will generally retain the risk associated with outages (and related maintenance) caused by	In mature markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. For other markets, particularly in the case of market first projects, the preparation of attainable standards by the Contracting Authority is complicated by the lack of relevant market data. The Contracting Authority should set standards which are achievable in the relevant market, taking into account, for example, applicable driving and vehicle maintenance standards. These may vary across different markets. In less mature markets, the Private Partner may require the Contracting Authority to reduce the performance

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					other water network infrastructure which interconnects with the distribution system. *See also Force majeure risk and MAGA risk.* The Contracting Authority is responsible for enforcing the performance regime and for ensuring that the performance specifications are attainable and properly tailored to what the Private Partner can deliver based on relevant market data and policy objectives and domestic and international water standards. The appropriateness of the metrics can be assessed by reference to standards of similar services provided by the Contracting Authority (or other government body), value for money, the nature of the project and the relevant markets. In the concession model, poor performance by the Private Partner may adversely affect revenues and may similarly be penalised under the concession terms. The Private Partner may be entitled to compensation to the extent this is the fault of the Contracting Authority. *See also Demand risk.*	requirements during the settling in period and possibly readjust the performance metrics once the performance of the distribution system has stabilized. This can mitigate the risk of long-term performance failure. In the concession model where the end user pays a tariff for the water it consumes, the Private Partner is likely to be limited in its ability to pass through any costs to the end consumer due to the fixing of water tariffs in the contract or through regulation.
	Operational resources or input risk		●	●	The main input or resource required for a water distribution project is water. This is usually within the ownership or control of the Contracting Authority and, accordingly, it generally bears principle responsibility for the quantity and quality of the water supplied at the delivery point. Water supply in a water distribution project is likely to be a particularly sensitive issue due to unpredictable weather patterns and drought. The other main input or resource required for a water distribution network is power for pumping. The Contracting Authority typically bears the principle responsibility to ensure an uninterrupted supply of power to the facility. The price of the power is often a pass-through cost. The Private Partner will generally bear the risk of all other resources to operate the project, such as labour supply. The Private Partner may be incentivised to increase efficiencies in energy consumption throughout the term by a mechanism to share the savings. Where the Contracting Authority is unable to meet its contracted thresholds for the quantity and/or quality of water, or is unable to secure the supply of the resources it is responsible for (such as a continuous energy supply), this may be treated as a relief or compensation event (or MAGA event). The Private Partner bears the principal risk and responsibility of ensuring an uninterrupted supply of other resources for the project (such as maintenance equipment and materials) and to manage the costs of those resources. It will need to consider this when structuring its supply arrangements. In some markets, there may be specific instances where resource risk needs to be shared (e.g. in relation to reliance on local source materials) where resources may be affected by labour disputes, embargos or other political risks. These may be treated as relief, force majeure, compensation or MAGA events. *See also Force majeure risk and MAGA risk.*	Certain markets are generally more susceptible to market volatility and major cost variations. Mature markets generally do not experience market volatility to the extent of less mature markets, and resource availability is less of a concern.
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the rehabilitation and operation of the distribution system and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue rehabilitation and/or operation/maintenance.	
	Health and safety compliance	[●]		●	The risk allocation for health and safety will, in part, depend upon operating responsibility for the asset. The Private Partner will typically bear this risk in respect of its operational responsibility, as well as in respect of maintenance/repair works and other health and safety aspects related to its project responsibilities. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority and/or a third	In some jurisdictions with developed construction and working practices legislation, certain of the Private Partner's responsibilities will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					party. *See also Liability for death, personal injury, property damage and third party liability.*	obligations, for example, in relation to maintenance work being carried out in the operating phase. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines.
	Liability for death, personal injury, property damage and third party liability	[●]		●	The risk allocation for these liabilities will depend upon operating responsibility for the asset. Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising out of the Private Partner's activities under the contract. The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. For example, water leakage damage due to defective pipes is a main third party liability risk, as well as water contamination. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically the Contracting Authority will set certain minimum requirements under the PPP contract (*see also Unavailability of insurance under Financial markets risk)*. The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third party claims against it over this threshold. *See also Liability for death, personal injury, property damage and third party liability under Construction risk.*	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.
	Maintenance standards			●	The Private Partner will bear the principal risk of meeting the appropriate standards regarding maintenance as set out in the contractual performance specification, so that the water distribution network remains available and robust and is handed back in the expected condition on early termination or expiry of the agreement. In the availability model this will mean ensuring that the network also meets the contractual levels of quality, availability and volume of output required to achieve a full availability payment. This includes day-to-day routine maintenance as well as lifecycle maintenance, replacement of particular assets. Failure to maintain the distribution system as required to meet the availability criteria under the PPP contract will lead to the Private Partner earning lower availability payments under the PPP contract. The PPP contract may also contain additional incentive mechanisms through which failures to maintain the distribution system in accordance with the performance specification may lead to payment deductions. Material and/or prolonged failure to maintain the distribution system would be a breach of the PPP contract potentially entitling the Contracting Authority to terminate the PPP contract. In the concession model, poor maintenance by the Private Partner may adversely affect revenues, for example, if the network suffers leakages and cannot deliver water to end users. The Private Partner may also be penalised under the concession terms for maintenance failures and the resulting handback condition of the assets. *See also Condition at handback risk*. In practice, estimating life cycle works may be challenging. It requires experience and, to the extent available, the Contracting Authority may be able to provide data on life cycle cost. As the standard for PPP is often set at a much higher level than for existing (non-PPP) projects, such data is likely to require a multiplier. Life cycle funding/reserving mechanisms may mitigate life cycle risk but are also difficult to design adequately and Contracting Authorities should bear in mind that these can have an impact on risk allocation/value for money. The involvement of the Private Partner in the operation, maintenance and rehabilitation of the project, and the linking to payment entitlement, can provide several benefits. It should incentivize greater care and diligence by the Private Partner in both the rehabilitation and operating phases, and increase the useful life of the infrastructure. The Contracting Authority may establish a facilities management committee to oversee the Private	In mature markets, the Private Partner generally assumes the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors, rehabilitation work, and in certain instances, work stemming from implementing technological or structural changes. *See also Disruptive technology risk.*

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Partner's performance of the maintenance and rehabilitation services, along with a formal mechanism to discuss and resolve performance related issues. Generally speaking, the Contracting Authority should avoid undue interference with the Private Partner's provision of maintenance and rehabilitation services so as not to dilute the risk transfer benefits. If the system is part of an existing interconnected distribution system, the Contracting Authority may be required to guarantee and manage maintenance which is dependent on that system.	
		●	[●]		**Throughput higher than forecast:** If distribution volume is much heavier than forecast and beyond the capacity specification required by the Contracting Authority, it may need to agree a mechanism to pay compensation in respect of increased maintenance costs or agree a system upgrade variation, noting that increased throughput will also typically increase the revenue available in a concession model project. *See also Demand risk.*	
		●		●	**Existing assets in the project:** To the extent existing assets are being integrated into the project system by the Private Partner as part of the rehabilitation works, the maintenance risk should be allocated to the Private Partner to the extent the condition of the existing assets is known and future maintenance work can be assessed properly by an experienced contractor. This is a key risk in water distribution rehabilitation projects. In some cases, where existing asset condition cannot be assessed, the Contracting Authority may need to retain the maintenance or latent defect risk (and fit for purpose standards may need to be appropriately adjusted). **Existing (or other) assets interfacing with the project:** The Contracting Authority will bear risk if it is required to guarantee and proactively manage the maintenance of an existing (or other) asset that integrates with and is key to the water distribution project. *See also Access to the site and associated infrastructure under Land availability, access and site risk.*	Some water projects have proved financially unviable for the private sector due to the state of disrepair and high maintenance costs.
	Interface				*See Access to the site and associated infrastructure under Land availability, access and site risk, Project management and interface with other works/facilities under Construction risk, Maintenance standards under Operating risk and Demand risk.*	
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism		[●]	●	Vandalism is not typically a risk in water distribution projects but may be a shared risk, for example with a threshold/cap above which the Contracting Authority will bear/ share the risk. This will depend on the nature of the risk and the extent to which the Private Partner can effectively have an impact on/mitigate risk, design choice, use of materials and restrict access to certain areas etc. *See also Site security under Land availability, access and site risk and Social risk.*	Vandalism, and the breaking of pipes to make illegal connections to the network, may be more of a risk in certain political climates and in certain geographical areas and malicious damage may be a concern depending also on the location and accessibility of the system.
DEMAND RISK *The risk of user levels being different to forecast levels; the consequences for revenue and costs; and government support measures.*	**Availability model**	●			In the availability model, demand risk is not applicable as the Private Partner will typically be paid for having made the distribution system available to a particular standard/capacity which is not reliant upon demand for water or whether the network is actually used.	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Concession model		[●]	●	**Demand:** In the concession model the end user pays a tariff for the water it consumes and the Private Partner bears demand risk. As this will determine its primary revenue the Private Partner should ensure it has commissioned and analyzed demand forecasts for water in the area potentially served by the distribution network. **Tariff-fixing:** The water tariff will be set under the concession terms or by regulation. If the Contracting Authority or other government entity is required to take action to set the tariff, a failure to do so in a reasonable manner should be treated as a compensation event or MAGA event if it has an adverse financial effect on the Private Partner. This could include failing to increase the tariff or increasing the tariff to a level which adversely affects user demand. Due to political and affordability reasons, water tariffs can be set at levels which make the project financially unviable – in this instance government support will be needed. **Higher demand than anticipated:** If distribution volume is much heavier than forecast and beyond the capacity specification required by the Contracting Authority, it may need to agree a tariff increase (and possibly revenue support) in respect of increased maintenance costs or system upgrade, noting that increased throughput will also typically increase the revenue available in a concession model project. **Lower demand than anticipated:** If distribution volume is much lower than forecast, this will impact the Private Partner's revenues. This may be caused by the tariff level, although with water being an essential resource, inaccurate forecasting may also be the cause. To mitigate this risk, both parties ensure that appropriate demand analysis has been carried out in assessing the project. Failure by the Contracting Authority to comply with any contractual obligations or measures which adversely affects demand would typically be treated as a compensation event or MAGA event. **Revenue risk:** As water is an essential commodity, even where demand risk may not be a concern, revenue risk may an issue, i.e. the ability to collect and enforce tariff payments from end users. Enforcing payment can be difficult depending on user demographic and expectation, such as opposition to private sector involvement in water delivery and to levying of payments and collection enforcement. This can be exacerbated by a perceived lack of political will to support enforcement and by unpopular tariff increases. *See Environmental risk and Social risk.* **Government support measures:** If tariff or revenues levels are too low to make the project financially viable, the Contracting Authority may need to provide additional support in the form of a subsidy or minimum revenue guarantee or a reduction in any concession fee potentially payable. This could be an upfront subsidy towards capital expenditure or a guarantee that if revenue falls below a specified level, the Contracting Authority will pay the Private Partner an amount to ensure it receives a minimum revenue. The threshold for the guarantee should be set at a level which incentivizes the Private Partner to increase user demand and pursue revenue collection and not to rely solely on the guarantee and discourage users and reduce maintenance costs.	In the concession model the end user pays a tariff for the water it consumes. the Private Partner is likely to be limited in its ability to pass through any costs to the end consumer due to the fixing of water tariffs in the contract or through regulation. Risks that impact on demand will also be closely assessed.
FINANCIAL MARKETS RISK *The risk of inflation; exchange*	**Inflation**	[●]		●	**Construction phase:** The risk of construction costs increasing due to inflation is typically borne by the Private Partner who will generally price in this risk in markets where such risk can be projected and quantified. Where this is not possible the Contracting Authority is likely to be asked to bear some risk.	The fluctuation of inflationary costs is a greater risk in less mature markets than it is in other markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the contract

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.		●			**Operation phase:** Inflation risk in the operating phase is typically borne by the Contracting Authority (on availability-based projects). The Private Partner will look to be kept neutral in respect of both international and local inflationary costs through an appropriate inflation uplift. There is always a time lag in how quickly the indexation price increase is available to the Private Partner. On availability-based projects, this is achieved by the availability payment typically including both a fixed component (where debt has been hedged) and a variable component which includes an escalation factor that accounts for rises in costs.	term. The variable component of the availability payment is typically defined by the consumer price index in mature markets. In other markets, the selected indexation method will need to reflect variable financing costs and variable inputs such as staff and materials. It will be more crucial in less mature markets to find appropriate indicators which mirror the project needs rather than a general consumer price index.
	Exchange rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority may expect the Private Partner to bear the risk of an exchange rate fluctuation for a specific time period (e.g. 90 days) between submission of bid and financial close. Where there is a prolonged period between bid submission and financial close, the Contracting Authority may need to bear the risk. Where exchange rates are volatile or long term currency swap markets are illiquid, the Private Partner may have limited ability to accept the risk of exchange rate fluctuation and will seek to transfer the exchange rate risk to the host country by requiring that some or all of the contract price is linked to a foreign currency, such as USD.	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of a change in exchange rate. Exchange rate risk can be substantial in markets where exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets.
			[●]	●	**Rate changes during project:** Allocation of exchange rate fluctuation risk over the life of a project will depend on the relevant project jurisdiction and the nature of the project costs. In most PPPs, the Private Partner will bid and be paid by the Contracting Authority (or end users) in the domestic currency of that country. It may, however, incur costs in a foreign currency and such costs are translated into the bid price in the domestic currency on the basis of a particular exchange rate. In some PPPs, the Private Partner (and its lenders) may seek to transfer the exchange rate risk to the host country by requiring that some or all of the contract price is linked to a foreign currency, such as USD. **Construction phase:** Exchange rate risk can arise where some or all of the rehabilitation costs are denominated in a currency different to the domestic currency. For example, where construction of the asset requires equipment that is manufactured overseas, adverse exchange rate movement may result in such equipment becoming more expensive than anticipated when converting domestic currency. This may use up the contingency the Private Partner has provided for in its financial arrangements (and priced into its bid) and/or require the Private Partner to take on additional borrowing in the construction phase to finance these costs. **Operating phase:** As with rehabilitation costs, a similar risk may arise if the Private Partner incurs operating costs in a currency different to the currency of the PPP contract payments. In addition, exchange rate risk can arise if the debt used to finance rehabilitation is denominated in a currency different to the domestic currency of the price paid under the PPP contract or tariffs collected. Adverse exchange rate movements during the operating phase where the debt is being repaid will result in debt repayment in the foreign currency requiring a larger proportion of the Private Partner's revenue. This may result in the Private Partner having insufficient funds to service its debt and/or may eat into its projected equity return. **Mitigation:** The Private Partner typically looks to mitigate exchange risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure the costs the Private Partner incurs are effectively fixed instead of fluctuating, and protects it against adverse rate movements.	Exchange rate risks are more substantial in markets where exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets). In more mature markets, the risk of currency fluctuations is typically not substantial enough to require the Contracting Authority to provide support and exchange rates risks are addressed solely through the Private Partner's own hedging arrangements. Where the exchange rates are more volatile, access to long term hedging may be either unavailable or too expensive. The likelihood of debt being dominated in a foreign currency is more likely in markets where financing by multilateral or international banks may be required (e.g. in less mature markets where there is limited depth in the local debt capital markets). *See also Strength of Contracting Authority payment covenant under Early Termination risk.* Some cost risk can be managed on concession model

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					The cost of such hedging will be part of the contract price bid. Devaluation of a local currency beyond a certain threshold may also trigger a non-default termination, or a "cap and collar" subsidy arrangement from the Contracting Authority.	projects by passing the risk through to the user by way of water tariff adjustments, but the ability to do this may be limited.
	Interest rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority normally expects the Private Partner to bear the risk of a change in the reference interest rate between submission of bid and financial close for a specific time period (e.g. 90 days). Any rate changes after this time period will be a Contracting Authority risk.	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of an adverse change in interest rate.
				●	**Rate changes during project:** The Private Partner will typically bear the risk of interest rate fluctuations over the life of the project but this will depend on the specific project and its jurisdiction. The Private Partner will seek to mitigate this risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure the interest rate the Private Partner is required to pay is effectively fixed instead of fluctuating, and protects it against adverse rate movements. The cost of such hedging will be part of the contract price bid.	In mature markets, the risk of interest rate fluctuations is not substantial enough to require the Contracting Authority to provide support and is typically addressed solely through the Private Partner's own hedging arrangements. In other (less stable) markets this may not be possible due to interest rate volatility or lack of long term hedging availability and in some circumstances it may be more appropriate for the Contracting Authority to retain interest rate risk if it can bear the risk more efficiently than the private sector.
	Unavailability of insurance		●		The responsibility for placing required insurances and the cost of doing so is typically borne by the Private Partner. However, PPP contracts typically also include provisions to address the risk of insurance becoming unavailable or only available at a cost which exceeds a level at which the Private Partner is able to price in reasonable contingency. This only applies if the uninsurability is due to factors unrelated to the Private Partner. Where neither party can better control the risk of insurance coverage becoming unavailable or more expensive, this is typically a shared risk. How this is addressed will depend on the specific project and jurisdiction. For the purposes of PPP projects, insurance is generally deemed unavailable to the extent (a) it is no longer available in the international insurance market from reputable insurers of good standing or (b) the premiums are prohibitively high (not just more expensive) such that contractors in the project jurisdiction are commonly not insuring such risk in the international market. As part of the feasibility study the Contracting Authority should consider what insurances are necessary and available at a reasonable premium and whether insurance might become unavailable (or too expensive) for the project given the location and other relevant factors. This is essential for assessing risk allocation for relevant events (e.g. force majeure risk allocation) and for the Private Partner to price its risks.	The standard approach as regards unavailability is common in mature markets. In some less mature markets, if insurance becomes unavailable, the Private Partner is typically relieved of its obligation to take out the required insurance but, unlike the mature market position, the Contracting Authority does not become insurer of last resort and the Private Partner bears the risk of the uninsured risk occurring. If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) and the parties are unable to agree on suitable arrangements, then the Private Partner may need an exit route (e.g. the ability to terminate the project on the same terms as if the unavailability of the insurance were an event of force majeure). In negotiating an insurer of last resort position, the Private Partner and, in particular, its lenders, will carefully assess the Contracting Authority's credit and its ability to meet liabilities if an uninsurable event occurs. This is a reason why this position may be more likely in economically stable markets. In less stable markets the parties may negotiate more over whether a particular insurance should be an obligation in the first place and how the risk (and its occurrence) might be managed (e.g. through the force majeure provisions). In less mature markets, wider reference criteria may be needed in defining unavailability (e.g. to address a situation
			●		**More costly premium:** Where the cost of the required insurance increases significantly (without becoming prohibitive), the risk is typically shared by the parties by either having an agreed cost escalation mechanism up to a ceiling or a percentage sharing arrangement. This allows the Contracting Authority to quantify the contingency that has been priced for this risk.	
			●		**Unavailability:** A standard approach in mature markets to manage unavailability of insurance is that where required insurances become unavailable, the contract typically requires the parties to try to agree a solution to manage the uninsurable risk and the Private Partner is relieved from breach of its obligation to take out the required insurance to the extent the unavailability is not due to its actions. If a solution is not agreed, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project as "insurer of last resort" (i.e. to effectively self-insure and/or put in place its	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					own insurance cover and pay out in the event the risk eventuates). If the Contracting Authority chooses to assume responsibility for the uninsurable risk, it may require the Private Partner to regularly approach the insurance market to try to obtain the relevant insurance and the contract price should be adjusted to reflect that the Private Partner is no longer paying the corresponding insurance premium.	where the pool of benchmark contractors is insufficient to draw a meaningful comparison). Projects in some locations may find it more difficult to get insurance for certain events under commercially viable conditions. In this case the parties will need to find a solution to unavailability at the start of the contract.
			●		**Occurrence of uninsurable event:** With the mature market standard approach, if an uninsurable event occurs, the Contracting Authority may (a) terminate the contract (typically on a force majeure basis plus corresponding third party liability payments) or (b) pay the Private Partner the equivalent of insurance proceeds and continue the project. The approach to termination compensation reflects the general acceptance that uninsurability is neither party's fault and should be a shared risk.	
		[●]		[●]	**Unavailability due to fault:** Risk allocation will be affected by the reason for unavailability. As highlighted above, the provisions should only apply to the extent the Private Partner is not responsible for the insurance unavailability. Equally, if the unavailability is caused by the Contracting Authority's actions, the Private Partner may want to negotiate a right to terminate if a fundamental risk becomes uninsurable.	
	Refinancing		●	[●]	There are two key risks associated with refinancing (the changing or replacing of the existing terms on which the Private Partner's debt obligations have been incurred): (i) the risk that a project will be unable to raise the required capital to refinance a project at a given point in time; and (ii) the risk that a refinancing of debt will create additional project risks (e.g in terms of potential increased liabilities for the Contracting Authority and increased financial instability of the Private Partner). The risk of failing to raise required capital will arise in projects where the Private Partner (a) needs to seek a rescue refinancing to reschedule its borrowings if it is struggling financially, or (b) needs to replace short term (mini perm) financing which may have been the only financing option available to (or desirable for) the project initially. This is typically a Private Partner risk. Mitigation measures can include, in the case of mini perm financing, raising debt capital that has a repayment schedule that is matched to the PPP contract and project revenues available over the period of the PPP contract or by structuring the debt in several tranches of different tenors so that refinancing risks are smaller but arise more frequently. Refinancings may also occur where the Private Partner wants to take advantage of better financing terms available in the market (e.g. where the market recovers after a global financial crisis or after construction completion when the project is perceived to be less risky by funders). The risk of a refinancing creating additional project risks will be a risk for both the Private Partner and the Contracting Authority. The Contracting Authority needs to ensure that a refinancing does not adversely affect it (e.g. by increasing the level of its potential liability for termination compensation above what would have been the case under the original financing documents/financial model or increasing the risk of such liability falling due if the financial stability of the Private Partner is affected). To mitigate this risk, the contract should specify that the Contracting Authority's consent is required in specified carefully drafted circumstances. Where the result of a refinancing is that the Private Partner's debt costs are reduced, resulting in greater profit and in turn a higher equity return (typically known as "refinancing gain"), it may be appropriate for the gain to be shared between the parties (e.g. to the extent it increases the original forecast equity return in the financial model). The Contracting Authority may expect to share a percentage of the refinancing gain (e.g. 50%) if public funds are being used to pay for the PPP project. To ensure it does not miss out on an anticipated share of any refinancing gain, the Contracting Authority should ensure that all relevant definitions are carefully drafted. The way the Contracting Authority receives its share of the gain will depend on the nature of the refinancing and discussions at the time. Options include: (a) a	Refinancing risks will ultimately depend on the depth and liquidity of the relevant capital markets. In more developed capital markets, the risk of failing to raise required capital is unlikely to be a significant risk as long-term finance is available from the outset. Mini perm financing is more common in countries where the capital markets are less developed and there is a lack of a market for long term debt instruments. However, banks globally already face greater regulatory pressure which affects the loan tenor they can offer, and it is likely they will face increasing restrictions even in developed markets which may lead to shorter initial debt tenors and increased refinancing needs. It has become increasingly acknowledged in mature PPP markets that it would not be fair for the Private Partner to enjoy the entire benefit of a refinancing gain where it is not entirely responsible for the availability of improved financing terms (e.g. where the market recovers after a global financial crisis). In emerging markets, particularly for demand risk projects, there may be limited scope for the Contracting Authority to negotiate refinancing gain sharing if such gain is a key incentive for potential bidders. Refinancing provisions may not be included. This is more likely in untested "riskier" markets where the prospect of refinancing gain is a key driver to bidders' participation (as has been the case, for example, in the Philippines). As with more mature markets, the potential for sharing refinancing gain should increase as the PPP market becomes more established and perceived risks decrease.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					lump sum upon the refinancing to the extent the Private Partner receives such amounts at the time of the refinancing; (b) a lump sum or periodic sums at the time of receipt of the relevant payments, or the receipt of the projected benefit; (c) a reduced availability payment; or (d) by a combination of the above (in accordance with the applicable payment model). For a more detailed analysis of typical refinancing provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	
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.*	**Private Partner failure/insolvency**			●	The Private Partner essentially bears the risk of failing to have the requisite technical or financial capability to deliver the project in accordance with the contract. However, as the consequences of such failures can lead to interruption in service and inconvenience to the Contracting Authority and users, as well as potential termination liabilities for the Contracting Authority, the Contracting Authority must carry out a thorough evaluation of each bidder to ensure that it selects the right partner to deliver the project, with whom it can develop the necessary long term partnership and meet any aspirations it may have as regards community engagement and local employment and skills development. *See also Risk Allocation in PPP contracts in the Introduction.*	
	Sub-Contractor failure/insolvency			●	The Private Partner is responsible for its sub-contractors and bears any associated risks, unless the Contracting Authority imposes mandatory sub-contractors, in which case it may need to bear, or share, certain sub-contractor-related risks. However, the sub-contractors should form part of the Contracting Authority's evaluation of each bid for the reasons highlighted in relation to the Private Partner.	
	Change in Private Partner ownership			●	Complying with any contractual restrictions on change in ownership will be a Private Partner risk. The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved and that any restrictions on, for example, foreign ownership of critical infrastructure are not circumvented. As the project is awarded on the basis of the Private Partner's technical expertise and financial resources, it will also want to ensure key parties such as parent company sponsors (and sub-contractors) remain involved. The Contracting Authority will typically prohibit any change in the Private Partner's shareholding for a period (e.g. by a lock-in for the construction period or until a couple of years into the operating phase (i.e. post energization) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met. The Contracting Authority's desire for certainty of involvement of key participants will need to be balanced with the private sector's requirements for flexibility in future business plans. This is particularly in respect of the equity investor markets and the added benefits of allowing capital to be 'recycled' for future projects.	In less mature markets, there is typically more restriction on the Private Partner's ability to restructure or change ownership. Overly restrictive provisions may deter investment, so this needs to be assessed in terms of the benefits to the Contracting Authority of both ensuring sufficient competition in the bid phase, and enabling parties to recycle their investment into other projects in the jurisdiction. Once the project is operational, for example, it may be reasonable for financial investors seeking regular returns to invest in place of certain of the initial (e.g. construction party) sponsors.
	Permitted Contracting Authority step-in	●		●	The risk associated with Contracting Authority step-in depends on the grounds for stepping in and whether due to the Private Partner's fault or not. Step-in circumstances include emergencies involving the emergency services, intervention to protect against social and environmental risks and fulfilling a legal duty to provide essential services of continuity of service. For example, the Contracting Authority may have the legal and/or contractual right to step into the project to remedy chronic or emergency situations, including water quality and public health issues. The scope and terms of the Contracting Authority step in is a key bankability point due to the potential impact on the parties' liability and can be a key risk in water projects in some markets. **Private Partner fault:** If step in is due to Private Partner fault or an event it is responsible for, the Private Partner essentially bears the risk of costs incurred by the Contracting Authority (and itself). In some jurisdictions this liability may be capped. The Private Partner is usually given relief from performance of its affected obligations and may receive some payment in respect of its obligations.	In some sectors in some jurisdictions (e.g. France), step-in is only contemplated in a breach situation and the Private Partner typically bears all cost up to a certain percentage (e.g. 15%) of project costs. A termination right may arise if the situation subsists for a certain period (e.g. 6 – 12 months). In some jurisdictions, the Private Partner may receive full payment as if it was performing the service in full or partial payment to reflect the affected obligations. In each case this will be subject to deductions and could result in zero payment. In some jurisdictions (e.g. in some EU countries and Australia), the Contracting Authority may not accept any liability when stepping in due to a Private Partner breach or

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					No Private Partner fault: In this situation, the Contracting Authority bears the risk and will be responsible for its own costs. The Private Partner will be given relief from performance of its affected obligations and be entitled to extensions of time and relief on the basis of a compensation event (except to the extent the cause falls under another provision (such as force majeure) in which case that provision will apply). It will be entitled to full payment subject to certain deductions and may also require a cost indemnity from the Contracting Authority. In each case, risk should be allocated in respect of later issues around interface between solutions implemented during step in and the Private Partner's planned delivery solution, as well as any other risks that are allocated to the Private Partner. For a more detailed analysis of typical Contracting Authority step-in provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	event which is the responsibility of the Private Partner, except in the case of gross negligence in an emergency step in, fraud or bad faith. The scope and terms of step-in will be particularly relevant for Private Partners in jurisdictions which are less predictable or have underdeveloped or less stable legal or regulatory frameworks as the Private Partner will be concerned to limit the Contracting Authority's potential effect on the delivery of the PPP project. It may only want to agree to such rights in projects in sectors and jurisdictions where the Contracting Authority is committed to ensuring continuous delivery of the essential public service and has demonstrable experience in such delivery.
	Change in Contracting Authority ownership/status	●			The Contracting Authority should bear the risk of any change to its ownership/status which adversely affects the project, for example, where its financial covenant and credit are adversely impacted. The Private Partner will typically have a right to terminate if certain criteria are not met and be entitled to compensation.	In stable markets, this risk may not be specifically addressed in the contract if satisfactory statutory or constitutional protections are available to the Private Partner. In less stable and untested markets, more specific provisions may be required, particularly where the Contracting Authority is not a central government entity.
	Disputes		●		**Private Partner/Contracting Authority disputes:** The risk of disputes is a shared risk and the consequences will depend on the outcome of the dispute. To minimise the risk of uncertain and costly outcomes, the contract should expressly include a clear governing law (typically the domestic law of the Contracting Authority's jurisdiction) and choice of dispute resolution forum (courts or arbitration). Efficient and fair dispute resolution processes should be included which provide for an escalated procedure where matters cannot be resolved between the parties' senior management, resolution of technical disputes by an independent expert, and recourse to the chosen forum. If the contract does not contain appropriate procedures this is likely to deter potential bidders and their lenders as efficient dispute resolution is a key bankability issue. A failure by the Contracting Authority to follow contractually agreed processes may also have an adverse effect on private sector interest in other PPP projects in that jurisdiction. There may be investment treaties applicable to the PPP arrangements with foreign parties, but these are no substitute for proper dispute resolution provisions in the contract itself. The Contracting Authority may be expected to waive any privileges and sovereign immunities which it enjoys before local and foreign courts (such as immunity from any suits by the Private Partner). Transparency and public access to information about disputes may be an important factor in choice of forum. In some jurisdictions the legal process is public which contrasts with arbitration which is generally a confidential and private process. Where additional agreements govern the relationship between the parties themselves, consolidation of related disputes and the joinder of related parties may be appropriate. To reduce the risk of concurrent processes, the agreements should include similar dispute resolution clauses agreeing to this. The Private Partner should be obliged to continue with performance of the contract while the dispute is resolved and, if so, will bear the risk of failing to do so. For a more detailed analysis of typical governing law and dispute resolution provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Contracting Authorities will typically select domestic law and local courts as the forum for disputes. This is for a variety of reasons including familiarity and compatibility with any concession/PPP legislation. It also minimizes the risk that local users and other stakeholders will bring claims in a different court. In jurisdictions with a less established and experienced legal system, the Private Partner is likely to want an established dispute resolution forum (such as a recognised arbitration centre for the particular region), rather than to rely on local courts. There may be circumstances where this option needs to be considered by the Contracting Authority as a necessary compromise in order to ensure the project is bankable. For the same reason, there may be certain cases where the Contracting Authority will consider having a foreign law as the governing law of the contract. Choice of forum may be restricted in some jurisdictions due to local law requirements (e.g. prohibiting referral of disputes to a foreign court or international arbitration, or being subject to a "foreign" law). This is particularly common in certain civil law countries where solely specific administrative courts are able to judge public authority decisions and/or contracts. Additionally, there may be local law limitations (under constitutional arrangements, public policy or otherwise) on contractually agreeing to waive sovereign immunity. There may also be reputational and political issues if a Contracting Authority is seen to exempt public sector projects from the jurisdiction of domestic

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
						courts.
				●	**Sub-contractor disputes:** The Private Partner is responsible for disputes with its sub-contractors. The Contracting Authority should avoid the risk of getting involved in expensive and time-consuming peripheral disputes with other parties. However, it may want to consider allowing certain disputes it has with the Private Partner to be joined with disputes on the same matter between the Private Partner and its sub-contractor where the forum for resolving the dispute is appropriate. Any assessment of the need for joinder provisions is likely to be fact-dependent.	
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.*		●	●	●	Responsibility for disruptive technology risk depends on the project circumstances. The Private Partner's obligation is to meet the output specification. If it fails to do so due to obsolescence of equipment or materials it is likely to suffer payment or revenue deductions and, above a particular threshold, may be at risk of termination. In this case it bears the risk of potentially having to replace relevant technological solutions (e.g. if the solution it has chosen is no longer supported). However, if it is performing above that threshold, the Contracting Authority cannot require it to replace technology simply because more efficient technological solutions are available unless there is an agreed contractual mechanism for doing so. In planning the project, the Contracting Authority will want to take into account that disruptive technology may impact its long term need for the asset. It may consider imposing obligations on the Private Partner to adopt and/or integrate with new technologies or to allow for other foreseeable developments, such as smart metering of water consumption by end users. It may be appropriate additionally to agree a specific cost sharing mechanic under which the Contracting Authority can request technological upgrades with appropriate cost sharing according to the reason for the request (e.g. if the replacement solution will improve health and safety or have social/environmental benefits). The same considerations apply if the Private Partner wants to make a technological change which is not strictly necessary and it may be appropriate for the Contracting Authority to consider incentivising the Private Partner to propose changes which will be of public or environmental benefit. The Private Partner will seek to mitigate potential exposure through agreed cost and improvement parameters, beyond which it will be treated as a Contracting Authority variation of the contract and entitle the Private Partner to relief in accordance with the contractual variation mechanic. *See also Variations risk.* It is important to take into account that some disruptive technologies may have both upside and downside effects on a project, as well as efficiency or social and environmental benefits. It may therefore be appropriate to consider mitigating mechanisms in any contractual solution. For example, the introduction of smart metering may have efficiency benefits but will add implementation and maintenance costs. In many jurisdictions changes can be made only in accordance with pre-agreed contractual mechanisms, to avoid third party challenges on the basis that the amendments are so substantial that the existing contract should be retendered.	Disruptive technology risk is becoming under increasing focus in all markets. This is particularly the case in relation to technological changes relating to environmental protection and this area may require its own treatment in the contract (e.g. through specific treatment under the contractual variations mechanism and/or through other specific contractual obligations). Where contracts impose an obligation on the Private Partner to seek continuous improvement in specified areas (e.g. monitoring and metering) or to operate in accordance with good or best industry practice, this may result in some element of technological advance.
FORCE MAJEURE RISK *The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.*	**Force majeure events**		●		Force majeure is typically treated as a shared risk where neither party is better placed than the other to manage the risk or its consequences. **Scope:** Force majeure is an event (or combination of events) outside the reasonable control of the contracting parties which prevents one or both parties from performing all or a material part of their contractual obligations. In some – typically civil law jurisdictions – the definition may require the event to be unforeseeable or not reasonably avoidable. Many jurisdictions have a concept of force majeure under general law and, particularly in civil law jurisdictions, this can limit the freedom of the parties to	The scope of force majeure will depend on the particular project and jurisdiction. In France, for example, the affected party is relieved from its obligations if force majeure prevents performance and French jurisprudence has defined the characteristics of a force majeure event as (i) beyond the control of the parties, (ii) unforeseeable and (iii) impossible to overcome.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					derogate from the scope of the legal concept and agree something different in the contract. However, most PPP contracts include specific force majeure provisions, whether they are civil law or common law governed, as this provides contractual certainty. The contract should be clear to what extent underlying law applies. **Approach:** Depending on the jurisdiction, the definition of force majeure may be an open-ended catch-all definition, an exhaustive list of specific events, or a combination of both. The open-ended catch-all definition is often seen in civil law-governed contracts and may also be more appropriate in markets which are less developed or stable and where there is little precedent or certainty. A non–exhaustive list of events may also be included. Qualifying events may be "natural force majeure" events (such as natural disasters and severe weather events, and possibly climate change events) and certain "political force majeure" events (such as strikes, war, government action etc). The exhaustive limited list approach is more common in developed and stable markets where the Private Partner has more certainty as regards the risk of events occurring and how it can manage them. It may be comfortable that events which might be force majeure in a less mature market (e.g. some types of industrial action) may instead be treated as relief events in a developed and predictable market. Under this approach, force majeure events are typically (but not necessarily exclusively) events which are uninsurable. Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; and (iv) discovery of any species-at-risk, fossils, or historic or archaeological artefacts. As market practice develops, certain climate change events might also be included. *See also Site Condition under Land availability, access and site risk and Climate Change event under Environmental risk.* For a more detailed analysis of typical force majeure provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. **Risk qualification:** The Contracting Authority should consider whether it can limit its risk by carefully defining the events which qualify as force majeure, and/or qualifying or excluding them as appropriate. For example, in some projects earthquakes may only qualify as force majeure if they are above a specified seismic intensity. Alternatively, an event may only qualify if it has subsisted for a particular length of time. In some projects, risk is allocated to the Private Partner and/or shared for the first few months, and subsequently becomes a shared risk or Contracting Authority risk (with entitlement to terminate if the force majeure event continues for more than a defined time period (e.g. 6 – 12 months)). Using an open-ended definition of force majeure widens the risk shared by the Contracting Authority, but may be appropriate in some markets. The availability of insurance for certain events will be one of the main criteria in determining the extent which an event should qualify as force majeure and/or how the consequences should be addressed. Certain risks may be more likely to constitute a force majeure event if they occur in one phase than another (e.g. events in the construction phase affecting materials supply).	In less mature markets, the list of specific events is likely to be wider than in more mature markets and include natural risk events, which typically can be insured (e.g. fire / flooding / storm etc), and force majeure events which typically cannot be insured (e.g. strikes / protest, terror threats / hoaxes, emergency services action etc). The extent to which the risk will be shared or allocated to one of the parties will depend on its nature and on the particular jurisdiction.
		●			**Contracting Authority political risk:** In some markets, certain political risk events may need to be allocated in full to the Contracting Authority because the Private Partner cannot reasonably be expected to bear any of the risk and/or because the Private Partner may price in such a high contingency in respect of the risk that it makes the contract unaffordable. Where the Contracting Authority bears the full risk of these risks, this may be addressed under the force majeure provisions but with "political force majeure" receiving different treatment to the shared risk force majeure events. Alternatively, these political risks may be treated in a separate provision under the heading of "material adverse government action" or similar (which may also include other forms of event for which the Contracting Authority is deemed solely responsible). *See also MAGA risk.*	In certain markets, it may be necessary to differentiate how similar types of risk events are treated, depending on where they occur. For example, in more politically volatile jurisdictions, war events might be wholly a Contracting Authority risk where they occur within the country, but a shared risk otherwise. *See also MAGA risk.*
	Force majeure		●		The basic principle of force majeure is that the risk is shared and each party bears its own losses.	The approach to cost and deductions relief varies across

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	consequences				However, there may be circumstances where it is appropriate for the Contracting Authority to provide relief to the Private Partner, provided the Private Partner has made reasonable efforts to mitigate the force majeure effects and to the extent it was not responsible for the event. In addition to granting the Private Partner relief from breach of its affected obligations, certain time or cost relief may be granted (sometimes where a particular threshold of costs or time delay has been reached). This will depend on the phase in which the event occurs and should be considered at the time, together with the impact of the event on the Contracting Authority and the options available to it. Termination following prolonged force majeure (e.g. 6 – 12 months) may also be available. If the Private Partner has the ability to terminate the PPP contract on the basis of a prolonged force majeure event, the Contracting Authority may want to include an option to require the PPP contract to continue, provided that the Private Partner is adequately compensated. This approach is more likely to be encountered in a more established PPP market. **Rehabilitation phase:** The consequences for the Private Partner of a force majeure event in the rehabilitation phase are that it may be unable to meet all or part of its contractual obligations, in particular key dates (such as the operation commencement date); may suffer delayed and/or lost revenue; and may incur additional financing and other costs (e.g. in relation to mitigating the event), both during and after the force majeure event. As well as relief from breach of the affected obligations, the Contracting Authority may decide to grant certain cost relief (either while the force majeure event subsists or through the operating phase if the contract continues) on the basis that the Private Partner has limited means to absorb additional costs and it may be in both parties' interests to avoid the Private Partner going insolvent. For example, it may elect to make a compensation payment at the time or, if the contract continues, grant extensions of time and/or an extended operating period so that the Private Partner has the opportunity to recoup lost revenue and costs. Alternatively, availability payments could be increased **Operating phase:** The consequences for the Private Partner of a force majeure event in the operating phase are that it may be unable to meet all or part of its contractual obligations (including failing to deliver the service); may suffer delayed or lost revenue; may incur additional financing and other costs; and may possibly be unable to service its debt repayment obligations. Again, in addition to relief from breach of its affected obligations, the Private Partner may be granted grant certain cost relief on the same principles as described in the construction phase. In an availability payment model, it may also grant payment deductions relief or relaxed performance standards (e.g. paying the Private Partner for actual water availability during the force majeure event and relieving it from any penalties for consequent inability to perform in developed markets and requiring a lower level of availability without incurring performance penalties in emerging markets). **Insurance:** Project insurance (physical damage and loss of revenue coverage) will be a key mitigant in respect of physical damage, to the extent it is available, and an important consideration in respect of compensation and how to continue the project. Design resilience is also an important mitigating factor, for example, for projects with seasonal weather such as storms/hurricanes/excessive snowfall or where earthquakes are common.	jurisdictions. In developed markets (particularly some civil law jurisdictions) Contracting Authorities may be more willing to make compensation payments during a force majeure event. In some jurisdictions, the contract will expressly identify only specific force majeure risks for which the Contracting Authority will grant financial relief (e.g. raw materials price volatility). It may not be as common in less mature markets for cost compensation to be paid during force majeure unless caused by an event deemed to be a political risk for which the Contracting Authority is wholly responsible (e.g. a MAGA event). *See also MAGA risk.* Force majeure relief should be distinguished from relief available under any hardship doctrines *(see Glossary definition)* existing under the underlying law of the project jurisdiction.
MATERIAL ADVERSE GOVERNMENT ACTION RISK (MAGA) *The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.*		●			In projects where a MAGA provision is appropriate, the Contracting Authority bears the risk of specific "political" actions having a material adverse effect on the Private Partner's ability to perform its contractual obligations, or on its rights or financial status. The Contracting Authority is responsible for costs and delays and is typically at risk of termination for prolonged MAGA events. Although not all jurisdictions use the term "MAGA", many have equivalent provisions under different terminology. MAGA events typically include: deliberate acts of state such as outright nationalisation or expropriation in relation to the PPP project; a moratorium on international payments and foreign exchange restrictions; certain governmental acts (such as not granting essential approvals where the Private Partner is not at	MAGA type clauses are more likely in less predictable and stable markets where the Private Partner (and its lenders) may require a clear regime to address specific government-related actions for which the Contracting Authority is responsible. This may be because of an actual or perceived likelihood of certain MAGA events occurring (e.g. war or civil unrest), or a lack of track record of PPP contracts being run successfully free from political interference over long

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					fault); and politically-inspired events such as national strikes. Change in law is also a form of MAGA. Although some of these events may not seem as obviously within the Contracting Authority's control itself as others (e.g. if they relate to other arms of government), market practice is that they are accepted by the Contracting Authority. This is because passing them to the Private Partner may result in it being unable to enter into the contract or pricing in such contingency that the contract is unaffordable. The list of events will depend on the individual project circumstances and the position agreed on force majeure events, and the Contracting Authority can limit its risk by qualifying relevant events by reference to a clearly defined materiality threshold. The process and consequences of MAGA are broadly similar to force majeure as regards the parties trying to find a solution and how the Private Partner may be compensated. The key difference is that the underlying principle behind MAGA relief is to put the Private Partner back into the position it would have been in had the MAGA event not occurred. The parties may terminate for prolonged MAGA, with compensation payable on a similar basis to Contracting Authority default termination. The Contracting Authority may be able to reduce its liability in some cases if it can negotiate different treatment for MAGA events which are not as clearly within its own control and influence. For a more detailed analysis of typical MAGA provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. *See also MAGA/Change in law termination under Early Termination risk.*	periods of time and across political cycles. In mature politically stable markets, the Private Partner (and its lenders) are often comfortable that the type of MAGA risks likely to arise are limited. Instead of being detailed in a specific Contracting Authority risk clause, they can be addressed through the shared risk force majeure provisions and compensation event type provisions (and the general right to terminate for Contracting Authority default in limited circumstances). Investors and lenders may be able to obtain political risk insurance in respect of some of these types of risks. This is more common in politically young or unstable markets. Some jurisdictions are more politically volatile internally than others and certain political risks will be treated differently. For example, war events may be treated as MAGA if they occur within the country, and shared risk force majeure if outside it.
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.*	**Compliance with applicable law**	 ●		● [●]	Compliance with applicable law and mandatory regulation is each party's risk. The Private Partner is typically subject to an express contractual obligation and will be in breach if it does not comply with applicable law, subject to change in law relief. The contract must be clear what laws and other mandatory regulations and industry codes the Private Partner is obliged to comply with. This is essential not only so the Private Partner can price its compliance, but also in order to determine what constitutes a change in law so that change in law risk can be allocated effectively. Compliance by third parties is likely to be a Contracting Authority risk where it has failed to enforce compliance and there is an adverse effect on the project (e.g. where load limits exceed permitted levels and increased maintenance costs are incurred). *See also Maintenance Standards under Operating risk.*	

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Change in law (and taxation)	●	[●]		The Contracting Authority primarily bears the risk of unexpected changes in law which were not in the public domain before a specified cut-off date in the bid phase and which cause the Private Partner's performance of its contractual obligations to be wholly or partly impossible, delayed or more expensive than anticipated (or impact its investors). This is because the Private Partner has contracted to provide the specific water distribution project at a specified price based on a known legal environment and typically has limited means of offsetting adverse consequences of unexpected law changes. As change in law may also benefit the Private Partner, change in law clauses are often reciprocal, to ensure the Contracting Authority benefits from the "positive" financial consequences of a legislative change. The Contracting Authority's risk can be mitigated by ensuring that the contract clearly defines what constitutes a change, the relevant cut-off date and what constitutes being in the public domain. This will vary according to the nature of the project and jurisdiction concerned. There are various approaches to risk allocation as briefly summarised below and the degree of risk sharing will depend on the type of change and the approach suitable to the maturity and stability of the relevant legal market. Any risk that is transferred to the Private Partner is likely to be reflected by contingency pricing in its bid which may result in the Contracting Authority paying for something that never happens. The Contracting Authority should be mindful of how it will fund changes in law which are at its risk should they arise. For a more detailed analysis of typical change in law provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Change in law risk may be treated as a MAGA event if the treatment agreed for this form of political risk is the same as for other MAGA events. Generally speaking, where a detailed approach to risk allocation is involved and where the consequences do not lead to termination, change in law is best dealt with separately – this is more typical is established markets. *See also MAGA risk.* In defining a change it may be appropriate for the definition to include any modification in the interpretation or application of any applicable law. This is particularly likely in common law jurisdictions. As highlighted by the different approaches, in mature legally stable markets the Private Partner will likely have less protection than in jurisdictions where changes in law are less predictable and/or more likely due to underdeveloped or less stable legal or regulatory frameworks. Approach (a) is often seen in developing markets with less established legal environments as it may be the only way that private finance can be raised and should also enable the Private Partner to offer a more competitive price. Approach (b) has also been seen in more developed markets and some emerging markets. Approach (c) is seen in more experienced PPP markets. While it will involve some contingency pricing, this approach is considered generally more beneficial to the Contracting Authority, but may not be bankable in every jurisdiction and should be contemplated on a case-by-case basis. Even in markets using this approach there will be instances where this risk allocation is not fully achievable due to the nature of the PPP project and the extent to which the applicable legal and regulatory regime is settled. Past models (including in the UK) used to require the Private Partner to assume, and price for, a specified level of general change in law capex risk during the operational period, before compensation would be paid. The UK Government ultimately decided that this allocation did not represent value for money and reversed this position. Some countries which adopted the UK model had already taken this approach. Although a Contracting Authority may bear all change in law risk at the start of a PPP program, once a track record and/or legal environment is established in its jurisdiction which gives the private sector greater confidence in the stability and predictability of the regime, Contracting Authorities procuring new PPP projects may be able to
		●			**Approach (a) Contracting Authority risk:** The basic approach is that the Contracting Authority bears all the risk of change in law and provides full relief to the Private Partner.	
		●	●		**Approach (b) Limited risk sharing:** A more nuanced approach is for the Private Partner to accept a certain annual monetary threshold up to which it accepts any unexpected change in law risk and above that threshold the Contracting Authority bears the risk/cost. This enables the Private Partner to price the risk it bears.	
			●		**Approach (c) Advanced risk sharing:** With this approach the Private Partner is kept whole in respect of unexpected changes in law which are: (i) discriminatory (e.g. to the project or the Private Partner); or (ii) specific (e.g. to the water distribution sector or to investors in water distribution businesses); or (iii) require capital expenditure after rehabilitation completion (i.e. in the operating period). (Applicable law may protect the Private Partner from unexpected changes in the rehabilitation period if the relevant legal regime provides that changes in law affecting capital expenditure during construction do not apply retrospectively.) With this more detailed approach the Private Partner bears (some of) the general business risk that applies to all businesses (including operational expenditure or taxation affecting the market equally) and can absorb this in part through the indexation provisions typically contained in the pricing mechanism .	
			●		**Bespoke mechanisms:** It may be appropriate to have bespoke mechanisms for certain changes in law, such as those relating to climate change and environmental protection – market practice is still developing in this regard. *See also Climate change event under Environmental risk.*	
		●			**Consequences:** The Private Partner should always be entitled to relief from breach of contract where a mandatory change in law occurs which conflicts with an existing obligation or would make compliance illegal (and/or impossible). The contract typically contains a mechanism by which the Contracting Authority is deemed to request a corresponding contractual variation of the relevant obligation. The nature of the cost relief given to the Private Partner will be as described for a compensation event.	

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Alternatively, the Private Partner may be entitled to a right to terminate (typically on a Contracting Authority default basis).	explore some risk transfer to the Private Partner. A termination right as a consequence of change in law is not considered necessary in all jurisdictions. In civil law jurisdictions it is common for the Private Partner to have a specific right to terminate the contract where performance of the PPP contract would entail a breach of law that cannot be remedied by a Contracting Authority variation. This is not usually seen in common law jurisdictions with established legal frameworks as the Private Partner and its lenders are able to take a view that it is highly unlikely that a change in law would result in such drastic consequences without means of holding the government accountable. In civil law jurisdictions, Private Partners may sometimes rely on underlying legal principles such as hardship doctrines *(see Glossary definition)* for relief. However, widespread market practice across civil and common law jurisdictions has shown that the private sector is unwilling to enter into PPP contracts on such a basis as both lenders and sponsors require express contractual certainty in relation to the potentially significant impact of changes in law. Projects in the water sector involve a close interaction with consumers and public health regulation plays a paramount role. A change in the public health and water quality legislation may well be of general effect but may have a disproportionate effect on the water sector, and in particular, on distribution network to consumers. For this reason, the parties may seek to adopt definitions of discriminatory/specific change in law to include any general changes in law that have this disproportionate effect.
		●			**Stabilization provisions:** Some projects may also provide for a stabilization clause that entrenches certain legal positions (such as the current tax regime) against any future changes in law. This may require a level of parliamentary ratification of the project contract.The stabilization method is generally not favoured by governments or non-governmental organisations (e.g. because the concept of Private Partner immunity from changes in environmental protection laws is unsatisfactory) and the Contracting Authority should instead seek contractual mechanisms to address such matters.	
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.*	**Contractual termination provisions**		●		The allocation of risk for early termination depends on the termination grounds and these also determine the financial consequences of termination. The key risks relating to the contract being terminated early are that the Private Partner is deprived of its expected revenue stream to repay the debt it incurred developing the project and the project asset or service ceases to be delivered for the Contracting Authority. The complexity and variety of termination circumstances result in parties in all jurisdictions almost always seeking to include clear contractual mechanisms in the contract which set out comprehensively what circumstances may give rise to termination, who may terminate and what the consequences of termination will be for the Contracting Authority and the Private Partner, as well as for lenders or other key third parties. Without such certainty, bidders and potential lenders may be deterred from bidding. The Contracting Authority should not be "unjustly enriched" by receiving an asset for which the Private Partner has not received the expected contractual price (or equivalent revenues). This is an underlying legal principle in most jurisdictions and should be taken into account in the drafting of applicable termination compensation provisions. The Contracting Authority, besides making a payment, will need to consider the other risks associated with termination, such as the reputational risks, continuity of service delivery, completion of the works or maintaining the asset itself, or re-tendering the project (or a mix). For a more detailed analysis of typical early termination and termination payment provisions and sample	The increasingly market standard approach in all jurisdictions is to include contractual termination provisions in the contract. However, in some civil and common law jurisdictions there may be underlying laws addressing certain termination rights and their consequences which apply without the PPP contract having to include termination provisions. While relying on underlying law rather than express contractual provisions is an approach less likely to be seen in common law jurisdictions, there can be certain exceptions as described, for example, under *Contracting Authority default termination and Voluntary termination by Contracting Authority*. Furthermore, if the transaction is financed in a shariah-compliant manner (such as through an ijara (lease) structure) consideration must be given to how ownership will be transferred following the termination. This is typically achieved through a Purchase Undertaking or Sale Undertaking of the underlying assets.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	In less developed PPP markets, it may not be easy to re-tender a project if there is no pool of alternative contractors to take on the project.
	Contracting Authority default termination	●			**Termination right:** The Contracting Authority bears the risk of termination for breaches which have a material adverse effect on the Private Partner or the project (e.g. expropriation in relation to the PPP project and failure to pay). The test is typically that the default event has made it impossible for the Private Partner to perform the contract or rendered the continued relationship untenable and any materiality threshold should be clearly defined. *See also MAGA risk.* To mitigate the risk of termination, the Contracting Authority should ensure that grace periods are built in (e.g. for non-payment) so that it has the opportunity to rectify the default and reduce the risk of a termination right arising purely from, for example, administrative error. **Compensation:** Although the exact approach depends on the relevant jurisdiction and the project model, the underlying principle is that the Private Partner should be fully compensated by the Contracting Authority as if the PPP contract had run its full course. In an availability model, the Private Partner would typically receive an amount in respect of senior debt (including where applicable hedge break costs), junior debt, equity investment and a level of equity return which from the Contracting Authority's perspective should where possible reflect the actual performance level of the Private Partner. Redundancy and sub-contractor break costs will also be included. A concession model would follow similar principles. The Contracting Authority should mitigate the amount it pays out by setting off deductions available to the Private Partner in respect of, for example, insurance proceeds, bank accounts, hedge break entitlements and surplus maintenance funds.	There are some common law jurisdictions (e.g. Australia) where the Private Partner is expected to rely on its common law rights to terminate for Contracting Authority default instead of having an express contractual right. This may be because termination for Contracting Authority default is such a fundamental step with enormous business and other ramifications for the Private Partner that the focus is instead on the enforceability of the contractual payment and time/cost compensation provisions applicable to breaches by the Contracting Authority. Similarly, in civil law jurisdictions the PPP Contract may be silent, and the Private Partner may need to apply to an administrative court to request contract termination (as was the case in earlier PPP contracts in France). Relying on underlying law is likely to deter bidders in markets where there is insufficient legal precedent and certainty.
	MAGA / Change in law termination	●			**Termination right:** Some PPP contracts may contain specific MAGA provisions which entitle the parties to terminate the PPP contract if there is a protracted MAGA event. The type of political risk events addressed by a MAGA provision may include the type of Contracting Authority defaults outlined under *Contracting Authority default termination* and also change in law where there is no solution agreed to continue the contract. This could mean that a PPP contract (i) only has a MAGA provision, (ii) only has a Contracting Authority default provision, or (iii) has a combination of the two and/or separate provisions addressing specific political risk matters such as changes in law. *See also MAGA risk and Change in law risk.* **Compensation:** The same principles will apply as outlined for Contracting Authority default termination but some jurisdictions may only allow the Contracting Authority to terminate for protracted MAGA-style events by implementing a voluntary termination. The Contracting Authority may be able to negotiate a reduced termination payment in respect of "no fault" MAGA events. *See also MAGA risk and Voluntary termination by Contracting Authority under Early termination risk.*	Markets which are politically and legally stable are less likely to have separate MAGA termination provisions as the Private Partner and its lenders will be comfortable relying on a Contracting Authority default termination provision, combined with a shared risk force majeure provision and other contractual provisions (e.g. compensation events) which provide time and/or money relief to the Private Partner in relevant circumstances of Contracting Authority responsibility.
	Voluntary Termination by Contracting Authority (Also commonly referred to as termination for convenience, public	●			**Termination right:** In return for having the right to terminate for convenience, the Contracting Authority bears the risk of this event. It should have fully considered and prepared for termination before deciding to exercise its right to terminate. The notice period should be the minimum sufficient for both parties to make appropriate arrangements in respect of the handback of the project and to facilitate compliance with handback obligations. **Compensation:** The Private Partner's prime concern will be to ensure it is fully compensated for such early termination and able to comply with its handback obligations. The termination payment will be	In some jurisdictions (more typically civil law) the Contracting Authority may be entitled to terminate the PPP contract on the grounds of public interest even without an express contractual right. This inalienable right is rarely invoked but the private sector (Private Partner, sub-contractors and lenders) will still require the PPP contract to cater for this low probability but high risk event as comprehensively as possible. The Contracting Authority

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	policy or interest. termination at will or unilateral termination.)				based on the same principles as for Contracting Authority default.	may be required to substantiate the validity of the public interest ground (for instance, termination may not be permitted purely on financial grounds). In some jurisdictions (e.g. France) it is not possible to contractually waive the right to unilaterally terminate in the public interest, but it is possible for parties to agree in advance the procedure and consequences of such termination. In practice, these are usually identical to voluntary termination, or even a Contracting Authority default scenario. This is because the Private Partner is not responsible for, nor capable of mitigating, a public policy-driven decision to terminate unilaterally.
	Force Majeure and Uninsurability termination		●		**Termination right:** The risk of a force majeure termination arising is shared by the parties. Typically it will arise after 6-12 months of prolonged force majeure where the parties are unable to agree a solution to continue with the project. **Compensation:** The Contracting Authority pays termination compensation to the Private Partner reflecting the principle that force majeure events are neither party's fault and the financial consequences should be shared. This is not "full" compensation as this would result in the Contracting Authority bearing all the financial pain. Typically outstanding senior debt (including where applicable hedge break costs), initial equity, redundancy payments and sub-contractor break costs will be paid, less any applicable deductions as on Contracting Authority default termination). The Private Partner will lose all its forecast equity return (i.e. its anticipated profit) but the payment will be sufficient to repay all of its outstanding senior debt which will help address bankability concerns as to whether the debt will be kept whole in this termination scenario. The equity element will serve as a buffer for lenders if the termination payment does not cover 100% of the outstanding debt.	In some (typically less developed) markets, the Contracting Authority may succeed in negotiating paying no termination compensation in respect of certain natural risks which are insurable (and would reasonably be expected to be insured against as good operating practice), or a reduced amount reflecting insurance payments received (or receivable) by the Private Partner. This to some extent reflects the practice in more developed markets where these type of events may instead be classified as relief events which entitle the Private Partner to time relief only (but no ultimate right of termination). This will of course depend on the risk assessment by the Private Partner and its lenders. In less mature markets it is not uncommon for the senior debt to be guaranteed as a minimum in every termination scenario, and for rights of set-off below that figure to be restricted.
	Private Partner default termination			●	**Termination right:** The Private Partner bears the risk of termination by the Contracting Authority for serious failures by the Private Partner connected to delivering the PPP project. Termination events may be performance-related or relate more specifically to the financial status and corporate activity of the Private Partner. In order to mitigate the risk of termination, the contract should clearly define the default events and they should have reasonable in-built tolerance levels so that an appropriate threshold of poor performance has to be reached before termination rights arise. The opportunity to rectify should be given where feasible. The Contracting Authority can mitigate the risk of a termination payment arising as it has control over serving the termination notice that triggers it. It also has the ability to mitigate against the risk of Private Partner default even before the PPP contract is signed, by careful selection of the winning bidder. *See also PPP Project Preparation and Delivery in the Introduction.* **Compensation:** The Private Partner will typically be entitled to a compensation amount equal to a pre-set percentage (around 80 – 100%) of the scheduled outstanding debt, minus applicable deductions, and no equity compensation. The aim of a lender "hair cut" of less than 100% debt is to incentivise lenders to conduct proper due diligence and exercise their monitoring and step-in rights to ensure the Private Partner delivers the project satisfactorily so that it avoids termination and can repay the whole of the lenders' outstanding debt. Alternatively, a market value retendering of the contract may take place (or be deemed to take place) and	In some civil law jurisdictions, insolvency laws may have an impact on the right to terminate the PPP in the event of insolvency of the Private Partner (or its shareholders). A debt-based compensation method is the most common approach in emerging markets and availability-based PPP projects in jurisdictions such as France and is also seen in Germany. The market value retendering approach is more likely in a mature PPP market where there are likely to be a number of potentially interested purchasers in the relevant sector. Lenders to PPP projects in certain jurisdictions or in relation to certain assets may be reluctant to rely on a market-based valuation method for fear of undervaluation or underpayment. This is particularly likely to be the case in emerging markets where there is a limited PPP track record and a limited market. Some European jurisdictions have followed a book value approach but this may not accurately reflect sums owed and is not as common. In less mature markets it is not uncommon for a high percentage or the full senior debt to be guaranteed as a

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					the compensation paid to the Private Partner will be the price tendered (or deemed tendered), less applicable deductions. A third alternative is for the Private Partner to receive a payment based on book value.	minimum in every termination scenario, and for rights of set-off below that figure to be restricted. The higher percentage haircut is seen in markets where the risks in respect of project failure and of the ability to rescue it are considered low (e.g. from a technical or resourcing perspective, or because the market is known), and the overall security package available to Lenders is otherwise sufficient to cover their debt. Lenders in such markets (e.g. in some projects in the US) may alternatively accept no compensation for the same reason but this is not common practice. If available in the relevant jurisdiction, lenders will seek a direct/tri-partite agreement with the Contracting Authority. The purpose of this is to give lenders step-in rights if the Contracting Authority serves a default termination notice or if the Private Partner is in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the Private Partner and seek a resolution to rescue the project and the right to ultimately novate the project documents to a suitable substitute private partner.
	Strength of Contracting Authority payment covenant	●		[●]	The Contracting Authority bears the risk of making the relevant termination payment on time and in the amount required. To mitigate the risk of failure, it will need to assess whether it will be able to pay a lump sum if such a large payment is not budgeted for or does not have backing from its government treasury department. Payment over time may be preferable and the Contracting Authority should in any event try to negotiate a reasonable grace period long enough to raise the necessary funds. The Private Partner and its lenders will typically want to close off their exposure to a terminated PPP project and avoid Contracting Authority credit risk as soon as possible. It is likely that they will favour a lump sum payment, particularly on Contracting Authority default termination where the most likely cause of termination is failure to pay. In some cases, the Contracting Authority may be asked to provide credit support of its payment obligations. Lenders may be reluctant to release security interests held over the PPP project assets until compensation payments have been made in full. This may make the transfer of relevant assets back to the Contracting Authority difficult. In certain circumstances, the Contracting Authority may be able to negotiate an interim solution at the time of the termination, such as an arrangement whereby it has a right to access the PPP project assets during the period from the termination date until all termination compensation is paid, so long as the Contracting Authority complies with the payment terms with respect to such compensation. This approach is unlikely to be agreed at contract signature and certain issues will need to be clearly addressed (such as liability for damage to the asset while in the Contracting Authority's use).	In jurisdictions where the Contracting Authority's credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in less stable regimes or emerging markets or in projects where the Contracting Authority is not part of central government. Support may be available via multilateral or export credit agencies or central government or sovereign guarantees. Lenders and investors may seek political risk insurance to cover the risk of the Contracting Authority or any government guarantor defaulting on its payment obligation. A key concern for lenders in some jurisdictions relates to the requirement for parliamentary approval of appropriations in respect of contingent liabilities under project contracts. In the Philippines, for example, the government requires a two-year grace period for the payment of termination compensation as this is the maximum period of time for the parliamentary appropriation process. In less mature markets, issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination. Release of security interests may not be a relevant concern in some jurisdictions, such as France, where lenders would not typically take security over the project assets as this would only give them limited rights. They would more usually take security over the Private Partner itself.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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 Private Partner bears the risk of the project assets and land being handed back to the Contracting Authority in accordance with the contract and meeting the required handback conditions. This is linked to maintenance of the assets during the contract and may be complex given the need to define relevant asset standards. The circumstances around handback will vary from one PPP contract to another and will depend on matters including: the Contracting Authority's intentions with regard to post PPP usage, the nature of the asset (e.g. the water distribution network and payment collection system may be usable for much longer than the initial PPP project duration), the stage at which the PPP contract comes to an end, whether termination occurs during construction or operation and any requirements under underlying laws in the relevant jurisdiction. To mitigate the risk of unexpected consequences, the contract should set out the requirements and process, including the Private Partner's obligations to facilitate an effective handover, hand over relevant licences and documentation and cooperate with the Contracting Authority so that the asset can continue the service. To mitigate the risk of the assets not being returned in the expected condition, the contract should include a mechanism for surveying conditions in advance of expiry and requiring relevant remediation. Typically the contract will provide for a retention fund to be established to fund remediation a certain period in advance of contract expiry, or for the Private Partner to provide some form of financial bond. Any funds remaining in existing lifecycle funds should be used/shared appropriately. For a more detailed analysis of typical handback provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition.*	In civil law jurisdictions, assets built on publicly owned land and/or used for a public service will often be subject to particular restrictions. For example, mandatory handback at termination may be embedded in underpinning administrative law principles or legislation and there may be mandatory access or rights of use for third parties. In some countries (such as France), ownership will sit with the Contracting Authority throughout the duration of the contract, with assets built on such land automatically becoming Contracting Authority property as soon as they are built and handed back for free at natural expiry. The PPP contract will set out the specific accompanying detail about asset condition and cooperation obligations, taking into account the underlying mandatory law provisions. Typically, in a common law jurisdiction, the Private Partner will have been leased the PPP project land by the Contracting Authority (and may have been permitted to sub-lease it to the relevant sub-contractors). The headlease to the Private Partner is usually coterminous with the PPP contract, so the land will revert to the Contracting Authority at the same time as the PPP project asset. In civil law jurisdictions, the PPP project land may have been made available through an administrative contract such as a "land concession" or other precarious right of use and is land within the public domain.

APPENDIX D:

Water to Energy Plant PPP Risk Allocation Matrix

PPP RISK ALLOCATION MATRIX: WASTE TO ENERGY PLANT

PURPOSE OF MATRIX	**This appendix contains a matrix of risks typically found in a waste to energy PPP transaction, together with guidance on how those risks are typically allocated between the government Contracting Authority and the Private Partner, the rationale for such risk allocation, mitigation measures and possible government support arrangements. It aims to provide governments (and, additionally, private sector stakeholders) with targeted guidance on the appropriate allocation of project risks in a PPP contract.**
CAUTIONARY NOTE	**This matrix contains an indicative – but not exhaustive – list of the main risks typically to be considered in waste to energy PPP projects and their typical allocation between the Contracting Authority and the Private Partner. It may be used as a starting point for understanding the risk allocation issues commonly arising in waste to energy projects and for developing an individual risk matrix for the project in question. A project's individual circumstances and its jurisdiction will influence the appropriate contractual risk allocation and there may be additional risks that need to be considered.** *See Detailed Risk Identification and Analysis in the Introduction.*

TYPE OF PROJECT AND SCOPE CONSIDERATIONS	This matrix addresses the common risks for the design, build, financing, operation, maintenance and transfer (at the end of the PPP contract) of a new PPP solid waste to energy plant where waste disposal capacity is made available to a state owned buyer, and with the ability to sell capacity to third parties wishing to dispose of commercial and industrial waste. Electricity generated by the plant is sold to utility companies (either state owned or private sector depending on the relevant market) and heat may be sold to industrial customers (either state owned or private sector depending on the relevant market). The plant transfers to the Contracting Authority at the end of the contract. Waste to energy technologies vary from conventional moving grate incineration to more advanced technologies such as gasification and pyrolosis which are regarded as more environmentally friendly. Sometimes the Contracting Authority specifies the form of technology it requires but in other cases the bidders are left to propose the technological solution as part of the procurement process. Projects can sometimes be procured on a partially or fully integrated basis involving the provision of other waste management related services in the locality of the project, including waste collection, operation of household waste collection facilities, waste transfer stations, recycling facilities and management and remediation of landfills (sometimes on an interim basis whilst the plant is being constructed).
ASSUMPTIONS	The Private Partner finances the development of the new waste to energy project and only starts to receive payment from the Contracting Authority (and/or where applicable, users) once the waste to energy project is in operation. The procuring entity identifies the site on which the plant will be built. The plant (and all related project assets) are handed back to the Contracting Authority on early termination or natural expiry of the contract, together with all consents and licences (including intellectual property licences) necessary to continue operating the plant, in accordance with the contractual handback requirements. The electricity produced from the project is sold to a third party electricity offtaker (in emerging markets this is generally a state owned electricity company) and the project will connect to the existing transmission lines and electricity distribution system which the grid network operator owns (or will own to the extent the Private Partner has built transmission infrastructure that is to be transferred to the grid network operator once completed).
MARKET APPROACHES	As well as PPP structures, there are other non-PPP contractual structures and procurement models that Contracting Authorities use to deliver waste to energy infrastructure with private sector involvement. These include more traditional procurement of just the construction of a waste to energy plant, and procurement of standalone maintenance and other service contracts. The risks addressed in this matrix and much of the risk allocation guidance will be relevant to different contractual structures and procurement models, but will need to be adapted appropriately taking into account the scope and duration of the relevant contract and financing methods (such as whether there is a need for long term third party lending and how to the pricing mechanism works).
PROJECT REVENUES, INCLUDING PAYMENT MECHANISMS	Where the Contracting Authority takes the entire waste capacity of the plant, project revenues are generated through payments by the Contracting Authority which may be structured on an availability basis. Deductions or penalties are typically applied to availability payments where the Private Partner has not met contractual availability and performance standard criteria. Where the Private Partner is able to source third party waste to fill spare capacity at the plant, project revenues are generated through payments by the Contracting Authority and third party users which are typically on a per tonne basis for waste accepted at the plant, supported by a commitment from the Contracting Authority to provide a guaranteed minimum quantity of waste (or equivalent revenue guarantee). The Private Partner will bear an element of demand risk on this basis. *See Demand risk.* Waste to energy projects will also derive income from energy sales (heat and/or electricity), typically accounting for 20 to 30 per cent of the overall project income. Energy sales revenues will be derived from energy charges which are levied at a unit price of electricity per Kwh generated with the offtaker generally committing to take all of the electricity generated by the waste to energy plant. Electricity generated by waste to energy plants is sometimes eligible for green incentive schemes such as feed in tariffs which are available to the Private Partner outside of the procurement process. In developed markets the Private Partner will usually enter into electricity offtake agreements with market participants and, where there are no available renewable incentive schemes, will be exposed to market price risk, which it may be able to mitigate through commodity hedging programs or bilateral arrangements with offtakers such as through price floors. In developing markets, the electricity offtaker is typically a state owned electricity company. The contract will need to address risk allocation in relation to the impact on energy sales of events for which the Contracting Authority/government has or shares responsibility.

	Depending on the technical solution, there may also be some small additional revenue income from recycled products separated during the process, for example metals separated from bottom ash.
KEY RISKS	**Planning and Permitting Risk:** Planning and permitting decisions for waste management facilities are often highly controversial in light of the associated environmental and health concerns (such as emissions, smell, noise and traffic movement). Careful consideration should be given as to whether all key planning and environmental permits should be obtained before the PPP contract is entered into. In the UK, a number of waste management PPP contracts were entered into before planning permissions were obtained and the Contracting Authorities incurred considerable costs in terminating or amending those contracts when planning permissions were delayed or could not be obtained. *See Key planning consents under Land availability, access and site risk.* **Technology Risk**: In addition to conventional moving grate waste to energy facilities, there are many different technical solutions available for waste to energy projects, ranging from non-incineration solutions (such as composting and anaerobic digestion) to incineration solutions offering higher recycling (i.e. with front end material recovery and anaerobic digestion) to advanced thermal treatment solutions (such as gasification and pyrolosis). Within each category there are a number of different alternative technology suppliers and there is constant technical innovation. Contracting Authorities and Private Partners need to navigate their way through these options to select the optimal technical solution for their project. In this regard, there have been a number of projects in the UK where new technologies have suffered delays and cost overruns during construction or failed to deliver the expected levels of performance, resulting in complex contractual disputes, financial losses to the Private Partner and its sub-contractors and financiers and/or the Contracting Authority and, in some case, termination of the PPP contract. *See Cost overruns and Works completion delays under Construction risk.* With advances in technology, there is also a risk that the selected technical solution, whilst capable of managing the waste to the agreed performance standards, no longer provides the most cost effective or environmentally beneficial waste management solution. *See Disruptive technology risk.* **Waste Composition Risk:** The composition of the waste delivered to a waste to energy facility can have a significant impact on its operations and revenue generation. Waste to energy facilities can generally process a wide range of waste types but low calorific waste may reduce electricity generation and high calorific waste may limit waste throughput. In the context of other facilities, waste composition can be more critical, for example in relation to composting facilities (which require a high biodegradable waste fraction) and recycling facilities (which require a minimum level of recyclable material and or limited contamination). Where Contracting Authorities have shared the risk in relation to composition changes (usually in relation to composting based schemes), UK experience has been that the difficulties inherent in accurately mapping waste composition and then identifying the cause and effect of changes in composition (particularly where there are a number of suppliers) have resulted in a number of long running disputes between Contracting Authorities and Private Partners as to responsibility for costs and losses arising from the composition changes. *See Operational resources or input risk under operating risk.* **Environmental and Social Risk:** The appropriate management and disposal of municipal waste is a critical public health issue. In light of this it is essential to ensure that (i) the waste to energy facility that has been procured provides an environmentally suitable solution; and (ii) consideration is given to how waste flows will be managed and disposed of during periods of planned and unplanned shutdowns, and who should be responsible for the additional cost. The first point is particularly critical in relation to the evaluation of proposals for new or unproven technology as, historically, technology failures have resulted in significant adverse environmental impacts (e.g .excessive noise/odour). In relation to the second point, an assessment of the cost and availability of alternative facilities should be undertaken to ensure that alternative facilities are available and, if their cost is substantial, the Contracting Authority may need to share that cost with the Private Partner to ensure that the Private Partner does not face unsustainable losses in the event of shutdowns. *See Environmental risk and Social risk.*
OTHER CONSIDERATIONS	Although a single operation commencement regime is more common, the Contracting Authority may wish to require the Private Partner to operate existing infrastructure and/or provide interim waste disposal services whilst the new plant and any other new facilities are being constructed. This can help increase cash flow during the overall construction process and reduce the Private Partner's financing costs but it can also increase the risk of the Private Partner in case of delay in completion of the new facilities as the costs of the interim service may increase or the alternative disposal facilities (e.g. landfill) may become exhausted.
PRIVATE SECTOR RISK MITIGATION	**Allocation of risks to sub-contractors:** *See Risk Allocation in PPP contracts in the Introduction* and *Cost overruns and Works completion delays under Construction risk.* As regards construction, the Private Partner will often enter into a lump sum construction contract with a construction sub-contractor to pass down its obligations under the PPP contract and to manage the risk of cost overruns and delays (subject to certain relief to which the sub-contractor will be entitled under the sub-contract). The Private Partner will bear the risk of liability caps agreed under the sub-contract being reached or warranty periods under the sub-contract being shorter than the Private Partner's defect rectification obligations towards the Contracting Authority. The Private Partner will similarly typically enter into an agreed price operating sub-contract with an operating sub-contractor to pass down its operating phase obligations to the extent practicable. **Insurance:** *See Risk Allocation in PPP contracts in the Introduction.* **Effective implementation of social and environmental management plan:** *See Environmental risk and Social risk.* **Additional equity and other funding support:** *See Market Conditions in the Introduction.*
PUBLIC SECTOR RISK MITIGATION	**Carrying out detailed feasibility and ground surveys:** See *PPP Project Preparation and Delivery in the Introduction*. In addition, studies for waste to energy projects should include identification and suitability of site, additional land needs, interface with existing and future infrastructure including other waste plants (and corresponding impact on the project), waste forecasts (especially if any demand risk is involved), waste composition studies and social and environmental impact of both the construction and operation of the solid waste to energy project. Detailed ground surveys should also be carried out where practicable. Where such information is provided to bidders to rely on in pricing their bids, Contracting Authorities may elect to guarantee accuracy but not necessarily completeness or interpretation – this will depend on project-specific factors including the experience of the bidders and the ability to obtain other relevant information.
	Running an efficient and fair procurement process: *See PPP Project Preparation and Delivery in the Introduction.* Enacting enabling legislation and complying with domestic procurement laws in relation to the project are primarily the Contracting Authority's risk and responsibility. As the Private Partner will be affected by the consequences of breach of such legislation, it will carry out due diligence itself on these matters. Interference with the tender process and other issues attributable to the Private Partner will remain a Private Partner risk.
	Timely consultation on social and environmental impact: It is key for the Contracting Authority to consider the effect of the project on people, wildlife and habitat and to implement effective management of stakeholder interests and public perception before and (in conjunction with the Private Partner) during the project. See *Environmental risk and Social risk.*

	Having competent advisers: *See Detailed Risk Identification and Analysis in the Introduction*.
	Timely involvement of internal stakeholders and contract management team: *See Detailed Risk Identification and Analysis in the Introduction*.
	Careful assessment and quantification of risk: *See Detailed Risk Identification and Analysis in the Introduction.*
	Taking performance security: The Contracting Authority may seek certain security direct from the Private Partner and its sub-contractors, or their parent companies, in respect of certain contractual (or tender) obligations. This may be in the form of bid bonds during the tender stage and, following the tender stage, completion bonds, performance bonds and guarantees. As an alternative, cash reserving mechanisms could be used during the life of the contract. Although the Contracting Authority may be able to call on this security in certain circumstances (such as performance failures by the Private Partner), the security will have a cost attached. This will feed through to pricing and may affect value for money, particularly since the security may never be called.
PUBLIC SECTOR SUPPORT MEASURES	The Contracting Authority may provide certain financial support to the project, in terms of subsidies or guarantees, although the consequences of such commitments and the potential liabilities for the public sector should be carefully considered, including how such support may dilute the risk/reward distribution under the PPP contract and affect value for money. Where the Contracting Authority's or an offtaker's own credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in projects where the Contracting Authority is not part of central government or it is a local authority. To mitigate this Contracting Authority counterparty risk, a sovereign or central government (e.g. finance ministry) guarantee (or equivalent support) may be needed, though the full implication for the public sector should be carefully assessed, including the potential impact on the government's contingent liabilities and fiscal sustainability. *See Demand risk, Project Revenues, Including Payment Mechanisms above and Strength of Contracting Authority payment covenant under Early termination risk*.

KEY TO MATRIX

Risk category rows		Broadly, the first row of a particular risk category summarises the risk and its main allocation. The subsequent rows detail specific issues relevant to that risk and its allocation.
Risk allocation symbols	●	Indicates how the main risk described in the relevant row is typically allocated.
	[●]	Indicates how the risk (or part of the risk) may be allocated differently in the particular additional circumstances described.
Defined terms		Certain terms used in the matrix are defined in the Glossary. For example, the terms compensation event and relief event are used throughout this matrix with respect to how a PPP contract addresses the eventuation of certain risks. For a detailed explanation of those contractual mechanisms, refer to the definition of compensation event and relief event in the Glossary.

SUMMARY MATRIX[1]

RISK CATEGORY	DESCRIPTION	BASIC RISK ALLOCATION		
		Public	Shared	Private
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.	●		
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.	●	●	
ENVIRONMENTAL RISK	The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.		●	●
DESIGN RISK	The risk that the project design is not suitable for the purpose required; approval of design; and changes.			●
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.			●
VARIATIONS RISK	The risk of changes requested by either party to the service which affect construction or operation.		●	
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.			●
DEMAND RISK	The risk of demand levels being different to forecast levels; the consequences for revenue and costs; and government support measures.		●	
FINANCIAL MARKETS RISK	The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.		●	
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.		●	
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.		●	
FORCE MAJEURE RISK	The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.		●	
MAGA RISK	The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.	●		
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.	●		
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.		●	
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			●

[1] Cautionary note: The summary matrix identifies typical risk allocation on an aggregated basis. For each risk allocation, however, there are generally exceptions. For the full discussion on typical risk allocation arrangements, please see the detailed guidance provided in the matrix below.

	the time of handback to the Contracting Authority.			

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Provision of required land – general**	●	[●]		The Contracting Authority typically bears the risk of selecting and acquiring the required land interests for the project, whether through compulsory acquisition/expropriation or other powers, because it has powers to do so which the Private Partner does not. It is also in the Contracting Authority's interest because on expiry of the contract the asset will typically revert to public ownership and operation (and/or the contract will be subsequently re-tendered). The Contracting Authority is generally responsible for providing a "clean" accessible site, with no restrictive land title issues. During the feasibility stage (see *PPP Project Preparation and Delivery in the Introduction*), the Contracting Authority should undertake detailed assessments as regards ownership of the relevant land and ensure that it has a complete understanding of the risks involved in acquiring the site and those that will affect the construction and operation of the waste to energy project. Such information should be disclosed to bidders as part of the bidding process. This includes consideration of matters such as rights of way, covenants affecting use or disposal and historic encroachment issues that may encumber the land, as well as how the Contracting Authority is addressing such issues and the extent to which bidders are required to price certain risks. To the extent the Private Partner has relied on information provided and priced any such risks, it will share in those risks provided that the information relied on was accurate. Some Contracting Authorities will guarantee only correctness of data provided, not completeness or interpretation If the Contracting Authority needs to use its legislative powers to acquire the site (e.g. through compulsory acquisition/expropriation), this may increase social risk and other opposition to the project (e.g. due to delay caused by court cases). *See also Social risk.*	In certain markets, land rights (in particular reliable utilities records, and land charges and third party rights to (access) land) may be less clear than in other markets where established land registries and utility records exist and risks can be mitigated with appropriate due diligence. Where reliable information is not available, this will increase the risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risk as the Private Partner will not be able to bear them. The rights of private landowners against compulsory acquisition/expropriation might be stronger in developed markets, so the Contracting Authority may need to allow more time to acquire the land.
	Timing of provision of required land	●			**Acquisition pre-signature:** The Contracting Authority should complete the process of land acquisition before the contract is awarded so that all issues and risks are known and managed. All relevant processes will need to be carried out in a timely manner. The timeframe will depend on the issues affecting the site and the applicable processes. The risk that all necessary processes have been satisfied will be the Contracting Authority's risk.	
		●			**Acquisition post-signature:** If the Contracting Authority is not able to provide the land by contract award, it will bear the risk of providing it in accordance with a contractually agreed programme. Failure to obtain the land by a certain date may entitle the Private Partner to terminate the contract *(see also MAGA risk)*. If the risk of non-availability is too great, this may deter some investors and financiers from engaging in or continuing in the bid process.	
	Provision of permanent additional land	●			**Identification pre-signature:** If a permanent need for additional land is identified and agreed by the parties before contract signature then the associated risk is usually treated in the same way as the original land. Usually the Contracting Authority will bear the risk of acquiring/providing the additional land, unless the need for additional land is specific to a bidder (for example, due to a different design).	
				●	**Identification post-signature:** If a permanent need for additional land is only identified after contract signature then this will be a Private Partner risk as the need should have been identified and factored in to the Private Partner's bid. The Contracting Authority may however find it needs to provide assistance with acquisition where the land is essential, with costs being borne by the Private Partner.	
	Provision of temporary additional land	●		[●]	**Identification pre-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during construction) are identified in the procurement phase and are common to all bidders, then the associated risk is usually treated in the same way as the original land. Usually the Contracting Authority will bear the risk of acquiring/providing such land, unless the need for such land is specific to	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					a bidder (for example, due to its construction methods and equipment) – in which case the risk should be allocated to that bidder and the cost factored into its bid price. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
				●	**Identification post-signature:** Where temporary additional land needs (e.g. for materials or equipment storage during construction) are identified, they should be a Private Partner risk as such need should have been identified and factored into the Private Partner's bid. The Contracting Authority may however find it needs to provide assistance in some cases, with the cost being borne by the Private Partner.	
	Heritage / indigenous land rights	●		[●]	Land rights issues involving indigenous groups will be the responsibility of the Contracting Authority. The Private Partner will bear the risk of complying with legislation and contractual obligations imposed on it in this regard. The Private Partner's obligations with regard to indigenous rights is well legislated for in some markets. In the absence of legislation, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project (e.g. compatible with the Equator Principles). This will be particularly relevant if international financing options are desirable. *See also Social risk.*	This issue is coming under increasing focus from multilateral agencies and other finance parties, as well as civil society and human rights organisations. For example, the World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects it is to finance. Many finance parties (including commercial finance parties) adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). Examples of specific legislation are native title legislation in Australia and the equivalent First Nations law in Canada. These include a requirement to seek consent from the indigenous parties affected and to enter into indigenous land use agreements.
	Resettlement				*See Resettlement under Social risk.*	
	Suitability of land		●		**General:** The risk that the land is not suitable is typically shared as the Contracting Authority may be able to secure the availability of the land, but the suitability of the land may be dependent on the Private Partner's design and construction plan (such as availability of water and power required for the proposed waste treatment process). *See also Design risk.*	
		●		[●]	**Underground:** Risk with regard to stability and suitability of the underground sits with the Contracting Authority if no or unreliable data is available and the risk cannot be transferred (or transferring the risk does not represent value for money). To the extent reliable data is available in the tender phase and can be relied upon by the Private Partner, the risk sits with the Private Partner. *See also Site condition under Land availability, access and site risk.*	
	Key planning consents	●			**Pre-signature:** In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents.	In the UK, some waste to energy PPP contracts were entered into with financing in place before planning consents were obtained. This led to significant additional contractual complexity in terms of addressing circumstances where planning consent was substantially delayed or not obtained at all and allocating risk in relation to unexpected planning conditions. In the face of strong local opposition, a number
		●		[●]	**Post-signature:** If consents for key permits are not obtained before contract signature and the Contracting Authority wants to sign the contract, it will typically bear the risk of the consents being delayed or not obtained (subject to the Private Partner complying with any reasonable requirements) –	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					this may be treated as a compensation event. Failure by the Contracting Authority to obtain the consents by a certain date is likely to entitle the Private Partner to terminate the contract. Permit risk may be complicated further if there are different levels of authorities involved, and interaction between levels of design and authorisations may impact the timeline. If the risk of non-availability of key permits is too great, this may deter some investors and financiers from engaging in or continuing in the bid process. *See also MAGA risk, Design risk and Environmental risk.*	of these projects faced long delays in obtaining planning or failed to obtain planning at all. This led to significant costs being incurred by Contracting Authorities when PPP Contracts had to be terminated or substantially revised as a consequence of planning failures and delays. In some jurisdictions, it may not be possible to obtain the requisite planning consents until such time as the Private Partner has been identified and/or detailed design is known.
	Subsequent planning approvals	[●]		●	Obtaining subsequent detailed planning consent and other approvals will be a Private Partner risk. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also Environmental risk and MAGA risk.*	
	Access to the site and associated infrastructure	●			**Construction phase:** In principle the Contracting Authority will be responsible for ensuring the Private Partner can access the site during construction. Either (i) it will pay the costs of providing access itself, or (ii) the Private Partner will pay such costs and be reimbursed through the contract price (or from revenues derived from third party users if applicable) to the extent it has priced such costs into its bid. This will depend on the nature of the access required. Failure to provide access may be treated as a compensation event. *See also MAGA risk.*	Third party rights to (access) land may not be easily identifiable in some jurisdictions, increasing risk of delay, cost overrun and disputes. This makes it more likely that the Contracting Authority will need to bear the associated risks.
		●			**Operation phase:** The Contracting Authority should bear the risk of ensuring that the Private Partner and third party users can access the new waste to energy facility. If any element of the Private Partner payment depends on demand (i.e. payment by third parties for waste disposal where there is additional capacity), this will be a key Contracting Authority risk. This may be treated as a compensation or MAGA event. *See also MAGA risk.*	
	Site security	●		●	**Construction phase/operation phase:** Risk allocation with respect to site security will depend on the political climate, opposition to the project, nature of the risk and the stage of the project. Parties should aim to have a complete understanding of the risks involved in physically securing the site and those that will affect the construction and operation of the waste to energy facility. Ordinarily the Private Partner will be responsible for day to day site security. However, the Contracting Authority may need to use statutory means to properly secure the site for the Private Partner (such as police involvement or eviction) and in some circumstances may be required to provide additional site security / assistance during operations to manage this risk. Failure may be treated as a compensation or MAGA event. *See also Force majeure risk, MAGA risk, Social risk and Vandalism under Construction risk and Operating risk.*	For example, where there is public opposition to the waste to energy project, there may be protestor action, or there may be issues safeguarding the equipment and installation.
	Utilities and installations	[●]		●	**Costs or delays caused by relocation of /access to utilities:** To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of any costs or delays caused by statutory undertakers and utility providers in carrying out diversions or connections. Costs and delays caused by re-location of existing utilities or access to utilities for the purposes of the project which are due to the Private Partner's design or construction plan are usually allocated to the Private Partner. For connections to existing infrastructure, including connection to the existing transmission lines and electricity distribution system, *see also Assumptions above and Project management and interface with other works/facilities under Construction risk.* The Contracting Authority will bear risk if no reliable information is available. It will also bear risk to	In some markets or challenging locations, there may be little data on location of utilities (water, sewage, oil, gas, optical fibre etc) and the Private Partner may be unable to accept all or part of this risk.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate. Lack of data on existing utilities location can make it difficult for the Private Partner to assess (and price) the cost and time needed for relocation which can impact on the construction timetable and ultimately on meeting the operation commencement date. If the Private Partner bears this risk, the Contracting Authority may need to share the risk by capping the Private Partner's liability or by having a cost sharing mechanism.	In markets where the utility provider is a private entity, this risk is likely to be treated as a relief event (and the utility company will bear the risk) – this is common in mature markets. In less mature markets, particularly where the utility provider is a state-owned entity, the risk is likely to be allocated to the Contracting Authority as a compensation or MAGA event.
		[●]	●		**Costs or delays caused by utility provider:** Costs and delays caused by a utility provider in providing utility connections (including, in the context of a waste to energy project, electricity grid or area heating network connections) could arise in both phases and the risk will be allocated according to the relevant circumstances and market and ownership of the utility. The risk could be shared or allocated to the Contracting Authority. *See also Project management and interface with other works/facilities under Construction risk.*	
	Site condition	[●]		●	**Surveyed:** The Contracting Authority usually undertakes detailed geotechnical and ground/soil surveys during the feasibility stage (if not already publicly available) and discloses such information as part of the bidding process. Sharing the surveys will save bidders' costs (all which would otherwise feed through to the Contacting Authority in the contract price). To the extent reliable data is available and shared during the tender process, the Private Partner can bear and price the corresponding risk of such conditions causing cost and delay. The Contracting Authority will bear risk to the extent data provided by it and relied upon by the Private Partner in its bid proves inaccurate. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation of the data.	In a mature market, the Contracting Authority normally hands over the site to the Private Partner in an "as-is" condition on the basis of the surveys provided. The Private Partner can rely on the surveys but otherwise bears the risk. In some markets, the bidders carry out the surveys during the tender process – this may be the best solution in some circumstances, but may also limit competition unless bidders are compensated for these costs.
		●	[●]		**Unsurveyed:** Where it is not possible to fully survey site condition prior to award (e.g. in high density urban areas), the risk for unsurveyable land will be allocated to the Contracting Authority (e.g. as a compensation event). The risk may be shared by the Private Partner (e.g. as a relief event) in some circumstances, for example where the risks were within the knowledge of the Private Partner when it priced its bid or an experienced contractor would have considered their existence as being possible. The impact on the project and the cost of remediation works for certain existing site conditions can be significant so the ultimate risk allocation will depend on the project specifics.	In some markets there may be less historic data available to the parties to assess risk. It may however be easier to perform comprehensive surveys in a less urban area.
		●	[●]		**Cultural / Archaeological finds:** Discovery of artefacts can cause delays and costs as there may be legal or other requirements in relation to reporting them and permitting archaeological study. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk. One approach is to share the risk such that the Private Partner bears the risk in respect of designated areas (such as a low risk area) and the Contracting Authority bears the risk outside such areas (such as a high risk area). Another approach is for the Private Partner to be obliged to coordinate work, but for the Contracting Authority to appoint specialised contractors and to bear cost/delay and interface risk.	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of finds is often treated as a relief event.
		●	[●]		**Unexploded bombs, land mines and other munitions:** Discovery of munitions can cause delays and costs as they will need to be defused and removed. The risk allocation will depend on the nature of the project, the extent to which the risk was known to and priced by the Private Partner, the reliability of data provided by the Contracting Authority and whether the project location is considered high risk.	In markets where reasonable surveys/assessment can be made and the risk priced, discovery of munitions risk is often treated as a relief event. In some countries, the risk of unexploded land mines can be high and specific surveying and cost provisions may need to be agreed.
		●		[●]	**Pre-existing environmental pollution:** Pre-existing pollution is typically the Contracting Authority's risk except to the extent it was known to and priced by the Private Partner. Remediation works for	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					certain existing environmental conditions can be expensive so the ultimate risk allocation will depend on the project specifics and the surveys provided to the Private Partner. *See also Environmental risk and Change in law risk.*	
	Existing asset condition	[●]		●	Where there are existing assets proposed to be used in the project, they should be fully surveyed (and potentially warranted) by the Contracting Authority. To the extent reliable data relating to the condition of existing assets is shared by the Contracting Authority during the tender process and can be relied upon during implementation, the Private Partner can price the risk of using them, including the interface with other aspects of the project and latent defect risks. The Private Partner will then bear the corresponding risk. The Contracting Authority will bear risk to the extent such data proves inaccurate or insufficient, and to the extent of any warranties it provides. Some Contracting Authorities will guarantee only accuracy, not completeness or interpretation. If latent defects are discovered in assets which are due to be replaced at some point in the life of the contract, the Contracting Authority may be able to mitigate its risk to some extent by having a contractual mechanism which brings forward the replacement date. *See also Suitability of design under Design risk, Project management and interface with other works/facilities under Construction risk and Maintenance standards under Operating risk.*	
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.*	**Community and businesses**	●	●	[●]	Ultimately, the policy relating to the social impact of the provision of infrastructure is for the government. The Contracting Authority will bear this risk except to the extent the Private Partner is responsible for implementing any social management measures. During the feasibility stage, the Contracting Authority should have considered the impact on habitat, (social) infrastructure and communities generally, as well as on adjacent properties and industries – both in terms of the construction and operation of the waste to energy facility. It may need to carry out social impact studies and aim to minimise any negative impact of the project. Consultation may reduce the risk of opposition if outcomes are incorporated in the strategy and tender requirements. The approach, compensation schemes and what is acceptable should be addressed in the bid requirements and the contract. Investors and lenders may expect to see a plan addressing social impact, including the execution of any necessary contractual arrangements. The Contracting Authority may choose to adopt internationally recognised social and environmental standards and practices for the project to manage social risk, especially if international financing options are desirable. Waste to energy projects can be unpopular locally due to the noise, smell and air pollution, the likely increase of heavy traffic in the area and concerns about contamination of the land – and, for example, the potential adverse effect on local housing prices for home owners. All the way through construction and operations, active stakeholder engagement by the Contracting Authority will be critical to avoid litigation, achieve key milestones on time and ensure it is delivering infrastructure that serves its public purpose. Both the Private Partner and the Contracting Authority should develop sound environmental and social risk management plans before construction begins. Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation (*see also Resettlement under Social risk*) and continued efforts to manage the social and political impact of the project on and around the site (possibly including a compensation regime for affected businesses adjacent to the waste to energy facility). The Private Partner will bear the risk of non-compliance with any contractual social risk obligations as well as social risk obligations set out in the underlying legal system, although even where social risk obligations are passed onto the Private Partner, the consequences of such risks occurring may come back to the Contracting Authority. For this reason, the Contracting Authority should critically analyse just what social risk obligations should be passed onto the Private Partner and what should be retained.	This issue is coming under increasing focus from multilateral agencies, development finance institutions and other international finance parties, as well as civil society and human rights organisations. Finance parties (including commercial finance parties) will look very closely at how these risks are managed at both private and public sector level. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (as described in the Equator Principles). The World Bank's commitment to sustainable development is set out in its Environmental and Social Framework which includes standards that both it and its borrowers must meet in projects it is to finance. In civil law jurisdictions the obligation upon the Contracting Authority to act "in the general interest" and to justify and document decisions may strengthen the stakeholder process. This is because the level of transparency and justification required should ensure that stakeholder views are properly taken into account and the risk of arbitrary decisions (and consequent challenges) reduced.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Where there is public opposition, there may be protestor action in both construction and operating phases, and/or issues safeguarding the site equipment and installation. *See also Site security and Access to the site under Land availability, access and site risk, and Vandalism under Construction risk and Operating risk.* For a detailed analysis on how governments can better address aspects related to social inclusion in the delivery of infrastructure, see the GI Hub's practical guidance on *Inclusive Infrastructure and Social Equity*.	
	Resettlement	●		[●]	Depending on the nature of the project, the Contracting Authority may need to retain the risk of unavoidable interference with affected parties and mitigate this through measures such as relocation. This may include the removal of formal and/or informal housing or businesses and resettlement of communities in another location, potentially also with compensation. The Private Partner is responsible for implementing any social risk management measures contractually agreed – these should be clearly specified by the Contracting Authority in the procurement phase to enable the Private Partner to price the cost and associated risks.	Resettlement of whole communities by the Contracting Authority is more likely in less developed markets where informal housing and businesses may be more prevalent. The affected parties may not have the means (or the transport) to relocate themselves, even if paid compensation, and whole communities may need to be moved together. In developed markets, affected parties may be more able to rely on rights under compulsory acquisition/expropriation laws and compensation received.
	Heritage / indigenous people	●		[●]	As with land use rights involving indigenous groups, any other social impact risks involving such groups will usually be the responsibility of the Contracting Authority but the Private Partner will bear the risk of complying with relevant legislation and contractual obligations. In the absence of legislation, indigenous rights issues and community engagement may be managed by the Contracting Authority through the adoption of internationally recognised social and environmental standards and practices for the project, particularly if international financing options are desirable. *See also Heritage/indigenous land rights under Land availability, access and site risk.*	The Private Partner's obligations with regards to indigenous rights is well legislated for in some markets and in other markets there may be more reliance on internationally recognised standards. *See also Heritage/indigenous land rights under Land availability, access and site risk.*
	Industrial action	●	●	●	The Private Partner assumes the risk of labour disputes and strike action adversely affecting the project except to the extent such action falls into the category of political risk – the Contracting Authority may bear the risk (if a MAGA event) or share the risk (as a force majeure or relief event) for strikes and other widespread events of labour unrest. For example, nationwide and sector strikes are usually Contracting Authority risks but strikes at the Private Partner's facilities will be a Private Partner risk. *See also Force majeure risk and MAGA risk.*	In less politically stable jurisdictions the Contracting Authority may have to accept more risk for strikes than in some jurisdictions. In markets where the risk of strikes is low, the Private Partner may be comfortable accepting this risk as a relief event.
ENVIRONMENTAL RISK *The risk associated with pre-existing conditions; obtaining consents; compliance with laws; conditions caused by the project; external events; and climate change.*	**Pre-existing conditions**	●		[●]	*See Site condition and Existing asset condition under Land availability, access and site risk***.**	Environmental scrutiny is increasing around the world. The Contracting Authority and the Private Partner must develop sound environmental and social risk management plans before construction begins. The risk of delay in obtaining approvals may be greater in some jurisdictions, particularly where different levels of government are involved. Delays in obtaining, or legal challenges to, environmental permits have caused significant construction delays in some sectors (for example, in the UK) and the timeframe required should not be underestimated. In jurisdictions or locations where there are perceived to be significant risks around the environmental permitting
	Obtaining environmental consents	[●]		●	Pre-signature: In most projects, there will be a benefit if planning consent for key permits and other key approvals can be obtained by the Contracting Authority before procurement – these may include key environmental consents In many major projects, the environmental authorisations are a key component of the project and may take significant time to be prepared and approved. In some cases, these authorisations are initiated (such as preparing the environmental impact assessment) and prepared by the Contracting Authority ahead of the procurement process. At a specified point in time, the Private Partner will take over the risks related to obtaining detailed environmental licences or permits related to the project.	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
		[●]		●	Post-signature: Except as specifically identified otherwise, the Private Partner typically bears the risk of obtaining all environmental licences, detailed permits and environmental authorisations required for the project after contract signature. However, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event or MAGA event. *See also MAGA risk.* In some countries, there may be different levels of governmental approval required. Local authorities may interpret certain requirements in their own way after the contract price has been submitted and impose unexpected conditions on the Private Partner. This could adversely affect the project's financial model. The parties should ensure that the contract sets out clearly how any such interpretation or unexpected requirement is addressed to avoid disputes as to which party bears the consequences. *See also Key Planning Consents under Land availability, access and site risk, Change in law risk and Compliance with environmental consents and laws under Environmental risk.*	process, the Contracting Authority may need to share risks in relation to matters beyond the reasonable control of the Private Partner (for example legal challenges to the grant of permits). International finance parties, multilateral agencies and development finance institutions are particularly sensitive about environmental and social risks. Many finance parties adhere to the Equator Principles, committing to ensure the projects they finance (and advise on) are developed in a manner that is both socially responsible and reflects sound environmental management practices (which are described in the Equator Principles). Finance parties will look very closely at how these risks are managed at both private and public sector level and this scrutiny is helpful to mitigate the risks posed by these issues. *See also Communities and businesses under Social risk.*
	Compliance with environmental consents and laws			●	The Private Partner bears the risk of complying with all environmental licences, detailed permits and environmental authorisations required for the project as well as applicable environmental laws. The parties should ensure that change in law provisions adequately address changes in (mandatory) environmental standards and laws to avoid disputes as to which party bears the consequences of any requirements imposed after contract signature. *See also Change in law risk.* In the absence of legislation, environmental obligations can be managed by the Contracting Authority through the adoption of internationally recognised standards and practices for the project, particularly if international financing options are desirable. *See also Communities and businesses under Social risk.*	
	Environmental conditions caused by the project			●	The Private Partner bears the risk of environmental events caused by the project to the extent due to its failure to comply with applicable licences, laws and contractual obligations. This includes conditions affecting both the project itself and third parties. The Private Partner will typically have strict obligations relating to contamination and pollution and consequent remediation measures. In relation to remediation at handback, *see also Condition at handback risk.* The Contracting Authority may want to satisfy itself as to the overall robustness and suitability of environmental plans proposed by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project, but the Contracting Authority should not take on any risk in doing so.	
	External environmental events		●		**Outside both parties' responsibility:** The risk of environmental events external to the project occurring which adversely affect the project (or, as a result, third parties) should be treated according to the nature and cause. They may be a form of shared risk, such as a relief event or force majeure event (e.g. if contamination from an adjoining waste management facility/landfill site operated by a third party migrates onto the site of the waste to energy facility and requires shutdown and remediation).	
		●			**Within Contracting Authority's responsibility:** If environmental events are within the responsibility of the Contracting Authority or government they may be treated as a compensation event or MAGA event (e.g. if contamination from an adjoining waste management facility/landfill site operated by a government entity migrates onto the site of the waste to energy facility and requires shutdown and remediation). *See also MAGA risk and Climate change event under Environmental risk.*	
	Climate change event	[●]	●		Market practice is developing with greater focus on events caused by climate change and the Contracting Authority should consider the risk and impact of climate risk events on the infrastructure (both one-off external weather events and more gradual effects, such as rising sea levels or temperatures). It may be appropriate to treat certain events as force majeure events if they occur beyond certain thresholds (e.g.	If clear requirements are not included, this may lead to different bidders taking this risk into account in different ways. To avoid speculation and disputes, post-contract award, these issues should be clearly set out in the tender

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					temperatures outside certain ranges). Design resilience is also an important mitigating factor, for example, for projects with seasonal weather such as monsoon or where earthquakes are common. An alternative may be to consider a separate contractual mechanism to address these type of risks over the long term life of the contract. As with other variations required by the Contracting Authority, any changes to the project scope to mitigate climate change effects are likely to need to be funded by the Contracting Authority where the Private Partner cannot foresee such developments and has no means of passing on the cost (and no other agreement as to cost sharing is in place). As it is likely to be more costly to retrofit measures, it is essential that the Contracting Authority consider this risk during the feasibility phase, and that both parties continue to consider this issue further during the tender process. See also Force majeure risk *and Operational risk*.	documents and negotiated throughout the tender process.
DESIGN RISK *The risk that the project design is not suitable for the purpose required; approval of design; and changes.*	**Suitability of design**	[●]		●	Generally the Contracting Authority should aim to transfer design risk to the Private Partner but the extent to which this is possible will depend on how involved the Contracting Authority wants or needs to be in specifying design requirements in the tender documentation. Alternative approaches are described below. **Output specification:** Where possible, the Contracting Authority usually aims to set a broad output driven specification in the tender documents, requiring the Private Partner to design and build the project in a way which satisfies the performance specifications and ensures compliance with applicable legal requirements, good industry practice standards and, where applicable, minimum quality standards. This allows for private sector innovation and efficiency gains in the design and choice of appropriate waste treatment technology. With this approach, the Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification. A design review process during the contract will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner, but care should be taken to ensure that the mutual review process does not reduce or limit the Private Partner's overall liability. Where the process technology used in the waste to energy facility is new or unproven and/or involves critical intellectual property rights available to a single supplier, this can create significant risk for the Private Partner (and consequently for the Contracting Authority in terms of the success of the project). *See also Private Partner failure/insolvency and Sub-contractor failure/insolvency under Strategic/Partnering risk.* In limiting how prescriptive it is in the performance specification, the Contracting Authority may wish to request a degree of cooperation and feedback during the bidding phase to ensure that the bidding consortia's expectations in terms of an appropriate risk allocation for design responsibility are taken into account when finalizing the performance specification. If the Contracting Authority provides bidders with a basic design, bidders will typically be responsible for any errors, if they assume this basic design in developing their detailed design. An alternative is to provide (more) detailed design, but to contractually oblige the bidders to comment on and subsequently accept the (amended) design. The Contracting Authority should bear the risk of technical information provided by it proving inaccurate to the extent the Private Partner was allowed to rely on it for design purposes (e.g. site condition surveys). *See also Changes to design under Design risk.*	In more developed PPP markets, the Contracting Authority typically drafts a broad output specification, unless permit or other regulatory requirements oblige it to provide more detailed and descriptive specifications. Projects in some less established PPP markets may be particularly dependent on availability of reliable resources necessary for construction and operation, which has implications for the Private Partner's ability to meet the reliability requirements in the performance specification and take full design risk. The quality of the information provided by the Contracting Authority and the Private Partner's limited ability to verify such data can hinder the Private Partner's ability to unconditionally take full design risk in some markets. Attempts to transfer the risk in such circumstances may also lead the Private Partner to price in expensive risk premiums that do not represent value for money for the Contracting Authority. Some UK waste management projects have suffered significant issues due to plant design not achieving the required specification, in part due to the use of new (and relatively untested) technical solutions.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
		●			**Prescriptive specification:** A prescriptive specification can, where essential, ensure the Contracting Authority receives bids on a particular (and similar) basis. However, the disadvantage of this approach is that it will restrict private sector innovation and efficiency gains in the design and may not result in best value for money. The Contracting Authority may also retain some design risk in certain aspects of the system or related works, if it is more prescriptive in the performance specification. For example, if the performance specification is too prescriptive (e.g. the performance specification requires the implementation of a particular technology which is new or unproven or only available from a single supplier), the Private Partner's ability to take construction and operational risk on the design solution may be impacted and the Contracting Authority may be required to assume or share certain risks. Some jurisdictions allow only limited room for individual design, since all key aspects and many details are already fixed in the official planning approval decision. If the Private Partner wants to deviate from these requirements it must conduct formal amendment procedures, which in practice have such process and risk impact that bidders are not willing to take the risk that comes with initiating such amendment procedures. *See also Changes to design under Design risk.*	
		[●]			**Existing infrastructure:** If the project is being integrated into existing infrastructure, the Private Partner's ability to warrant the fitness for purpose of its design solution must be considered – it may not be able to warrant defects in the existing infrastructure which may impact the project's performance and the Contracting Authority may have to bear this risk. *See also Existing asset condition under Land availability, access and site risk, Project management and interface with other works/facilities under Construction risk and Maintenance standards under Operating risk.*	
	Approval of designs	[●]		●	The Private Partner will bear the risk of obtaining design approvals as it will have principal responsibility for preparing the detailed design and obtaining relevant approvals from the appropriate state or other body. However, if the Private Partner has complied with all relevant conditions and time frames, the Contracting Authority will share this risk to the extent the relevant authority does not act properly or within approval process deadlines – this may be treated as a compensation event. *See also MAGA risk.* Where specific solutions or consultants are imposed by the Contracting Authority (e.g. architectural or technical), some risk may remain with the Contracting Authority.	
	Changes to design	●		●	The risk of changes to design after contract signature is allocated according to the reason for the change. If the original design is deficient, this will be a Private Partner risk, subject to the aspects which are the Contracting Authority's risk (as outlined in *Approval of designs and Suitability of design under Design risk)*. If changes are required by the Contracting Authority, this would as a rule be a Contracting Authority risk (with the consequent time and cost implications borne by the Contracting Authority on the same principles as for compensation events). See also Variations risk. Contractual amendment procedures can in practice have such process and risk impact that the Private Partner may not be willing to take the risk that comes with initiating such amendment procedures. Requesting design changes or alternative or more detailed design development during the procurement stage will delay the procurement timetable and cause bidders to incur additional costs. The lack of certainty and potential cost may deter bidders and, depending on the change in requirements, may result in the procurement process needing to be re-run to comply with procurement laws or risk later challenge.	
CONSTRUCTION RISK *The risk of construction costs exceeding modelled costs; completion delays; project*	**Cost overruns**	[●]	[●]	●	Cost overruns (i.e. costs exceeding the construction costs assumed in the project's financial model) can have a variety of causes, such as mistakes in construction cost estimates, increased cost of materials, actions of the Contracting Authority or government, variations, as well as delays in – or mitigating potential delays in – the construction programme.	In certain markets, risk is considered manageable by the Private Partner through robust pass through of obligations to credible and experienced sub-contractors and by allowing, appropriate timetable and budget contingency. The Private

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
management; interface; quality standards compliance; health and safety; defects; intellectual property rights compliance; industrial action; and vandalism.					The Private Partner typically assumes the risk of cost overruns to the extent these are not caused by force majeure, compensation events (such as in relation to unsurveyed site conditions) or MAGA events, and are not addressed through other bespoke provisions (e.g. Contracting Authority variations, Change in law or provisions specifically addressing exchange rate risk during construction – *see also Variations risk, Change in law risk and Exchange rate fluctuation risk under Financial markets risk)* or hardship doctrines *(see Glossary definition)* in underlying law. The Private Partner will mitigate these risks by passing them through as far as possible to its sub-contractors (for example, the construction sub-contractor). The Private Partner's financial model will typically include contingency pricing for cost overruns (as will the sub-contractor's assumptions). *See also Force majeure risk and MAGA risk.*	Partner can mitigate the risk of sub-contractor non-performance by obtaining appropriate security from the sub-contractors (for example, parent company guarantees and/or performance bonds). The Contracting Authority may sometimes seek additional security itself to ensure such costs can be met - see Taking performance security under Public Sector Risk Mitigation and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees and performance bonds). Enforcement of construction budgets may be easier in markets where the Private Partner will typically have more experience and reliable access to resources.
	Works completion delays	[●]	[●]	●	Delays in delivering the infrastructure by the relevant works completion date can have a variety of causes, such as unavailability of construction materials, delays in shipping, variations and mistakes in programme scheduling, as well as weather events, civil unrest or industrial action and actions of the Contracting Authority or government. The Private Partner typically assumes the risk of delays to the extent they are not caused by relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or change in law). *See also Force majeure risk, MAGA risk, Variations risk and Change in law risk.* In most projects, the relevant date is the scheduled operation commencement date and to achieve that the works will need to be evidenced as complete. Some projects may instead (or in addition) require separate works completion deadlines to be met. This may be the case in jurisdictions where specific acceptance processes are required by law for construction works under public contracts and/or for insurance purposes. The consequences for the Private Partner of delays to the relevant works completion date are loss of expected revenue from operation of the plant, increased costs in providing interim waste disposal costs (such as landfill disposal costs) during the period of delay and ongoing construction and financing costs. In extreme cases, there is also a risk of potential termination for failing to meet the "longstop date" (a final later date by which the Private Partner must complete the project works/commence operation to avoid the Contracting Authority being entitled to terminate). The Private Partner will pass through these risks as far as possible to its sub-contractors (and may require the sub-contractors to pay it agreed damages to compensate for the delay to and loss of its overall project income and act as an incentive for timely completion). The Contracting Authority may also consider imposing agreed delay damages on the Private Partner to compensate it for delay to the start of the operating phase. However, imposing such agreed damages will typically result in the Private Partner building additional contingency time and cost into the project's construction plan and the Private Partner should already be sufficiently incentivised to meet the relevant works completion date on time so that its revenue streams can commence. Some jurisdictions require certain criteria to be met in contractual provisions imposing delay damages if they are to be legally enforceable. Broadly speaking, if the damages exceed the Contracting Authority's likely real losses they may be seen instead as a disproportionate penalty and the provisions may be unenforceable.	Enforcement of construction deadlines may be easier in markets where the Private Partner will typically have more experience and reliable access to resources. Projects in some sectors in less mature markets have faced significant construction issues and the Contracting Authority will need to be prepared to enforce its rights to manage the consequences of a failure by the Private Partner to meet the construction milestones. In less mature markets, the management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached agreed damages for delay) followed by a fixed period for operation; or (ii) a scheduled construction period forming part of the overall contract term which is itself fixed, subject to extensions for certain events such as force majeure. With the latter scenario, the Contracting Authority may attempt to additionally impose agreed delay damages on the Private Partner. The difference between the two structures is that the former preserves the project's revenue generating operation phase and the Contracting Authority relies on the agreed delay damages to incentivise timely completion of the works and operation commencement. In the latter case, the incentive to complete the works and meet the scheduled operation commencement date is that any delay at the Private Partner's risk will reduce the revenue-generating operating phase.
	Project			●	**Project management:** The Private Partner is best placed to integrate complex works and technology in	In some markets the Private Partner may be allocated the

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	management and interface with other works/facilities	[●]			the waste to energy plant. Typically, the Private Partner assumes project management risk. **Interface with other works/facilities:** Interdependence with other projects may also affect contract obligations and risk allocation. If some or all of the project is dependent either on the Contracting Authority carrying out particular works or making available an existing facility, or on related infrastructure work being completed by a third party, that interface risk will be the Contracting Authority's risk. For example, the project may be relying on the Contracting Authority procuring the construction of an electricity sub-station so that the waste to energy plant can be connected to the electricity grid, or on a road to be built to the plant. If the operation commencement date will be delayed due to such works not being carried out on time or the Contracting Authority otherwise failing to meet its obligations, this will be a compensation event or MAGA event. *See also Utilities and installations and Access to the site and associated infrastructure under Land availability, access and site risk, Suitability of design under Design risk, Maintenance standards under Operating risk and MAGA risk.*	risk of third party work being properly and timely completed, particularly if the Private Partner has the opportunity to enter into interface arrangements with the third party. These interface agreements will result in the interface risk being shared between the Private Partner and the third party. The Contracting Authority should facilitate such agreements where it has an existing relationship with the third party.
	Quality assurance and other construction regulatory standards		●		Meeting relevant quality standards will be a Private Partner risk, but where standards or codes are revised after the bid submission date this risk allocation will depend on whether the changes are mandatory and whether the Private Partner has priced the risk of such changes into its bid. The Contracting Authority may consider increasing the contract price to account for increased costs of compliance or the Private Partner may be excused from compliance with the new standard if it is not mandatory. This may be dealt with through the change in law provisions. *See also Change in law risk.*	
	Health and safety compliance			●	Responsibility for health and safety compliance on the construction site is typically a Private Partner responsibility. The Private Partner typically bears the risk of complying with health and safety laws/requirements and indemnifies the Contracting Authority in respect of any breach of such requirements. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority or other government entity and/or the affected party. Some projects require an annual safety review which enables the parties to assess relevant performance and safety management. Otherwise, the engagement of an experienced contractor with a strong safety record is also a mitigant.	In some jurisdictions with developed construction legislation, the Private Partner's responsibilities in the construction phase will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal obligations. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines.
	Liability for death, personal injury, property damage and third party liability			●	Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising due to the construction works. The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically the Contracting Authority will set certain minimum requirements under the PPP contract (*see also Unavailability of insurance under Financial markets risk*). The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third-party claims against it over this threshold.	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.
	Defects and defective materials			●	The Private Partner should be required to design and construct the project in accordance with good industry practice, and bears the risk and responsibility for completing the project free of defects. Defects are typically categorised as (i) visible and (ii) latent/hidden defects and are treated differently under the contract. The risk of visible defects is sometimes covered by an interim acceptance at completion of the works (and may result in a one off payment of agreed damages). As latent defects may not be noticeable for some years, the Private Partner is typically liable for such defects for a number of years following	Defects liability periods vary between legal systems and jurisdictions, and may be set contractually or in some cases by law. Market practice also varies between sectors.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					completion and the Contracting Authority may request a performance bond from the Private Partner to support this obligation (which the Private Partner will require from the relevant construction sub-contractor). The Contracting Authority may retain latent defects risk in existing structures. *See also Existing asset condition under Land availability, access and site risk and Maintenance standards under Operating risk.*	
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the construction and operation of the waste to energy project and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue construction and/or operation/maintenance.	
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism		[●]	●	Vandalism will often be a Private Partner risk, sometimes with a threshold/cap above which the Contracting Authority will bear/ share the risk. This will depend on the nature of the risk and the extent to which the Private Partner can effectively have an impact on/mitigate risk, design choice, use of materials, site access and security during construction, etc. *See also Site Security under Land availability, access and site risk and Social risk.*	Vandalism may be more of a risk where the political climate opposes the waste to energy project.
VARIATIONS RISK *The risk of changes requested by either party to the service which affect construction or operation.*		●	[●]	●	**Contracting Authority change:** The Contracting Authority typically bears the risk and cost of service changes implemented following its request. The contract will specify the extent to which it is entitled to require changes and the reasonable grounds on which the Private Partner may refuse. The Contracting Authority will also bear the risk of ensuring it can meet its cost liabilities. **Private Partner change:** The Private Partner will bear the risk and cost of service changes implemented following its request, unless the parties have agreed a sharing mechanic as part of their discussions of the change. A sharing mechanic may be appropriate where the Contracting Authority wants to incentivise the Private Partner to introduce innovative or environmentally-friendly solutions. If the Contracting Authority is liable for costs, it should mitigate its risk by requiring a transparent costing review process, which it can due diligence. This is likely to be particularly a concern during the construction phase. As with any potential liabilities under the PPP contract, the Contracting Authority will want to consider how best it can fund such payments (e.g. through financing the variation direct itself, requiring the Private Partners to procure committed but undrawn funding at financial close or to establish a reserve to fund future variations, each of which will come at a cost and may affect value for money, or requiring the Private Partner to procure financing at the time of implementation of the variation. Where financing is procured by the Private Partner, whether at financial close or at the time of implementation, the Private Partner's revenues will need to be adjusted to fund repayment of the financing. The risk and cost associated with changes arising due to other provisions will be addressed according to those provisions. *See also Changes to design under Design risk, Cost overruns and Works completion delays under Construction Risk, Increased operating costs and affected performance under Operating risk, Climate change event under Environmental risk, Disruptive technology risk and Change in law risk.*	Some jurisdictions have detailed change protocol templates to follow for variations to ensure that costing is fair and transparent. Due to the impact changes can have on construction or operation (e.g. in terms of timing, cost and delivery), there may be restrictions placed on the ability to request changes of certain types or in certain phases. The Contracting Authority's ability to request and meet any changes costs will also be a concern, particularly where it has a weak credit.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
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.*	**Increased operating costs and affected performance**	[●]	[●]	●	Increased costs and delays in the operating phase can have a variety of causes, ranging from mistakes in maintenance cost estimates or variations to extreme weather events. Aside from adjustments for inflation, the Private Partner broadly assumes the risk of events which inhibit performance and/or give rise to cost increases beyond modelled costs, to the extent these are not relief, force majeure, compensation or MAGA events, and are not addressed through other bespoke provisions (e.g. in respect of Contracting Authority variations or changes in law) or hardship doctrines *(see Glossary definition)* in underlying law. *See also Force majeure risk and MAGA risk.* Operating costs for waste to energy projects are particularly susceptible to changes arising from developments in environmental regulation (for example increased environmental monitoring, enhanced waste handling requirements, increased emissions controls and incineration tax). In general terms, these changes are usually the responsibility of the Contracting Authority. *For further discussion see also Variations risk and Change in law risk.*	
	Performance/ price risk			●	The Private Partner bears the risk of meeting the performance specification under the contract (i.e. by ensuring that the works and the operational performance are of the necessary quality and level). Failures to achieve expected levels of operational performance (in terms of facility availability and energy generation capability) will result in reduced revenue for the Private Partner, through availability deductions, reduced gate fee revenue and/or reduced electricity revenues. Performance monitoring also enables the Contracting Authority to monitor service levels generally and potentially to receive early warning of matters requiring improvement or remediation. Reliable waste management services are a critical public health issue so it is essential that the Contracting Authority has in place suitable arrangements to ensure that waste can still be processed and disposed of in an appropriate manner during periods of planned and unplanned shutdown of the waste management facilities. In this context, the Contracting Authority needs to determine whether the performance regime should require the Private Partner to provide "continuity of service" by finding alternative disposal outlets for waste that cannot be processed at its own waste to energy facility. If the Private Partner is responsible for continuity of service, then it should continue to receive the availability payment/gate fee for waste received and will be required to bear any increased costs of transportation to and disposal at alternative facilities. If the Contracting Authority is responsible for finding alternative disposal, then, in an availability based payment structure, there should be an abatement in the payment to the Private Partner and, in a tonnage based payment structure, a reduction by reference to the lower volume processed at the plant. Consideration should be given to imposing an additional penalty for increased financial or environmental cost of disposing of the waste at alternative facilities although this approach may lead to risk pricing by the Private Partner which may not represent value for money, particularly where alternative disposal outlets are limited or costly. Where certain availability criteria or performance indicators cannot be met due to actions by the Contracting Authority (or other government entities) or unforeseen circumstances, the Private Partner may be entitled to relief (e.g. if caused by a relief, force majeure, MAGA or compensation event). *See also Force majeure risk and MAGA risk.* The Contracting Authority is responsible for enforcing the performance regime and for ensuring that the performance specifications are attainable and properly tailored to what the Private Partner can deliver based on relevant market data and policy objectives. Performance based on increased recycling, landfill reduction, availability, and quality of service can be measured against pre-determined schedules or standards. The appropriateness of the metrics can be assessed by reference to standards of similar services provided by the Contracting Authority (or other government body), value for money, the nature of the project and the relevant markets. Typically, lower performance standards are imposed in the early	In markets where there are limited alternative disposal outlets or where those outlets are not accessible by private sector parties, the Contracting Authority may need to commit to provide alternative disposal outlets during outages of the waste to energy facility and may not be able to pass through the full additional cost of alternative disposal.

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					operational period to give the Private Partner an opportunity to manage snagging issues and minor defects typically encountered in the early phase of operation of waste to energy facilities. The technical performance of the waste to energy facility is key and the Contracting Authority must carry out due diligence on the parties and the proposed technology to assess its viability. If the waste to energy facility does not meet the specified requirements in the commissioning phase, the Contracting Authority may not want to accept it and operation will not commence. Alternatively, the Contracting Authority may elect to lower the required performance specification in return for a lower price. Both of these may have a major impact on the Private Partner and its sub-contractors' financial position. This risk is higher for relatively untested technology and the Private Partner may require an increased margin between contractual performance commitments and the expected performance of the waste to energy facility to mitigate and share this risk. *See also Operational resources or input risk under Operating risk, Private Partner failure/insolvency and Sub-contractor failure/insolvency under Strategic/Partnering risk.*	
	Operational resources or input risk		●	●	The Private Partner bears the principal risk and responsibility of ensuring an uninterrupted supply of resources for the project (such as utilities, maintenance equipment and materials, and specialist vehicles) and to manage the costs of those resources. It will need to consider this when structuring its supply arrangements. The Contracting Authority typically bears the risk of supplying waste, either by virtue of an availability based payment structure or by agreeing to provide a guaranteed minimum quantity of waste to the waste to energy facility with a liability to compensate the Private Partner for lost gate fee and associated lost power generation for the quantity not supplied. Where the contract includes collection, that guarantee will relate to the waste made available for collection; in other cases that commitment will require the Contracting Authority to collect and deliver that quantity of waste collected to the waste to energy facility or, potentially, to transfer stations controlled by the Private Partner if that is within the project scope. To mitigate the risk to the Contracting Authority of it being unable to supply the minimum waste quantity, the Private Partner may be required to seek to procure substitute waste to the extent the Private Partner has access to such waste in the wider waste market. The parties should develop a comprehensive market strategy for procurement of substitute waste. For example, the Private Partner must use reasonable endeavours to secure substitute waste at a price which is demonstrated to the Contracting Authority's satisfaction as being reasonably obtainable on market and arm's length terms for contracts of the nature and tenor proposed. The Contracting Authority will pay the difference between the cost of the contracted waste and the substitute waste, or the losses incurred by the Private Partner. The Contracting Authority may also offer exclusivity to the Private Partner in relation to all waste quantities of particular types (i.e. black bag waste) collected in a specified local area. This may enable the Private Partner to accept a lower minimum guaranteed waste quantity such that the Private Partner's equity return is risked on the volume of waste arising, with the guaranteed minimum securing debt financing. Where exclusivity is offered, the Contracting Authority should consider reserving the right to introduce new recycling schemes so that the exclusivity commitment does not crowd out recycling initiatives. The Private Partner should be able to take a view on the potential impact of new recycling schemes based on the scope of current recycling in that market and data from other markets on the effect of the introduction of other feasible recycling schemes. Where the Private Partner is sizing the waste to energy facility to process third party waste in the waste to energy facility and using the benefit of that income to effectively subsidise the gate fee to the Contracting Authority, the Private Partner may require a maximum limit on the waste delivered by the Contracting Authority so that it can fulfil commitments to third party suppliers. The Contracting Authority should carefully consider whether the maximum limit is set at a level that will meet likely requirements and may reserve the right to deliver waste above the maximum limit where it compensates the Private Partner for lost third party waste income and costs of unwinding third party supply	Certain markets are generally more susceptible to market volatility and major cost variations. Mature markets generally do not experience market volatility to the extent of less mature markets, and resource availability (for resources other than the waste itself) is less of a concern. In addition, energy costs may still vary significantly over the course of a project in a mature market. There have been a few projects where Private Partners have accepted exclusivity without minimum quantity guarantees but this is likely to have a significant cost impact as it will adversely affect the availability of bank debt financing and increase the requirement for more expensive equity financing. Certain waste technologies are more sensitive to waste composition – for example composting facilities may require a particular percentage of biodegradable waste, whereas waste to energy facilities can typically process a wide range of waste. Similarly, recycling facilities will have more specific waste composition requirements, such as minimum levels of recyclable materials within the waste stream and/or maximum levels of impurities.

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					commitments. The Contracting Authority should undertake due diligence on those commitments to ensure potential breakage costs are on reasonable market terms. The Contracting Authority will also need to consider the extent to which it should accept risk on the characteristics of the waste delivered (i.e. that the waste is suitable for the disposal method intended) and provide compensation to the Private Partner if the waste does not meet the required composition (for example, by way of compensation for lost electricity revenue if the waste has a low calorific value which constrains electricity production). Certain technologies (i.e. composting) or processes (i.e. recycling) are more sensitive to waste composition and the Contracting Authority needs to carefully consider how it can manage the risk of delivering waste that meets the composition requirements, and the financial and operational impact of failing to do so. As an alternative to a direct commitment to provide waste with a specific composition, Contracting Authorities sometimes provide protection for changes in composition arising from events within their control, for example as a consequence of changed waste collection methodologies (such as undertaking source segregated recycling). However, determining the exact effect of these changes on the waste composition can be very difficult and can lead to protracted dispute as to the cause and effect of the change in composition of the waste stream. In addition to possible revenue impacts of unsuitable waste, certain waste content may damage the waste to energy facility (for example gas bottles and munitions) and/or require unplanned shutdowns (for example human remains). The Private Partner may be willing to take risk on these items based on agreed waste acceptance protocols (designed to spot and filter out these items) or its insurance coverage. It may also be more comfortable with this risk if it manages the collection of waste or waste transfer stations through which waste passes before processing, The Private Partner may seek to pass this risk back to the Contracting Authority where it is not satisfied that the Contracting Authority has adequate procedures in place to minimise the delivery of extraneous material. In some markets, there may be specific instances where the risk needs to be shared (e.g. in relation to availability of energy supply or reliance on local source materials) where resources may be affected by labour disputes, embargos or other political risks. These may be treated as relief, force majeure, compensation or MAGA events. *See also Force majeure risk and MAGA risk.*	
	Intellectual property	[●]		●	The Private Partner takes the risk of obtaining all relevant licences for the construction and operation of the waste to energy facility and for intellectual property infringement except to the extent that the Contracting Authority imposes certain design or other technology solutions on the Private Partner, in which case the corresponding risk may be shared or borne by the Contracting Authority. The Private Partner must ensure that all required licences are able to be transferred to the Contracting Authority (or its nominee) at the end of the contract to enable it to continue construction and/or operation/maintenance.	
	Health and safety compliance	[●]		●	The risk allocation for health and safety will, in part, depend upon operating responsibility for the asset. The Private Partner will typically bear this risk in respect of its operational responsibility, as well as in respect of maintenance/repair works and other health and safety aspects related to the services provided by the Private Partner during this phase. Subject to applicable law, the Private Partner's liability may be mitigated to the extent the health and safety incident was caused or contributed to by the Contracting Authority and/or a third party. To the extent that the Contracting Authority has operational control of the asset, the Contracting Authority would typically retain "day to day" operational health and safety responsibility.	In some jurisdictions with developed construction and working practices legislation, certain of the Private Partner's responsibilities will be set out in law with strict liability for certain incidents. There may be specific bodies which will sanction it for breaches of applicable health and safety legal obligations, for example, in relation to maintenance work being carried out in the operating phase. A breach of applicable health and safety obligations may give rise to criminal liability for one or both parties (and/or their personnel), including the risk of fines.

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Liability for death, personal injury, property damage and third party liability	[●]		●	The risk allocation for these liabilities will depend upon operating responsibility for the asset. Except where arising due to a breach or fault by the Contracting Authority, the Private Partner will usually bear the risk of personal injury, death and property damage to either the Contracting Authority (and its employees and other personnel) or third parties arising due to any building issues/defects and on-going maintenance/repair services and any other services/responsibilities of the Private Partner. The Private Partner will usually indemnify the Contracting Authority against any liabilities it incurs as a result of such personal injury, death and property damage. The Private Partner should take out appropriate insurance to cover its potential liabilities, but typically the Contracting Authority will set certain minimum requirements under the PPP contract (see also Unavailability of insurance under Financial markets risk). The Private Partner may seek to cap its liability to the Contracting Authority (often by reference to its required insurance cover). If the Contracting Authority accepts a cap, it will bear the risk of third party claims against it over this threshold. *See also Liability for death, personal injury, property damage and third party liability under Construction risk.*	In many jurisdictions by law it is not possible to exclude (or cap) liability in respect of death and personal injury. In certain jurisdictions, it may be appropriate for the Contracting Authority to bear certain risks relating to what are ultimately state responsibilities or other factors outside of the Private Partner's control, for example a failure or lack of intervention by emergency services.
	Maintenance standards			●	The Private Partner will bear the principal risk of meeting the appropriate standards regarding maintenance as set out in the performance specification, so that the plant and any associated facilities remain robust and are handed back in the expected condition on early termination or expiry of the agreement with a minimum anticipated residual life *(see also Condition at handback risk)*. This includes day-to-day routine maintenance as well as lifecycle maintenance and replacement of particular assets. Failure to maintain the assets in accordance with the performance specification will lead to payment deductions and, where significant, potentially breach. In practice, estimating life cycle works may be challenging. It requires experience and, to the extent available, the Contracting Authority may be able to provide data on life cycle cost. As the standard for PPP is often set at a much higher level than for existing (non-PPP) projects, such data is likely to require a multiplier. Life cycle funding/reserving mechanisms may mitigate life cycle risk but are also difficult to design adequately and Contracting Authorities should bear in mind that these can have an impact on risk allocation/value for money. The involvement of the Private Partner in the operation, maintenance and provision of lifecycle services for the waste to energy facility, and the linking to payment entitlement, can provide several benefits. It should incentivize greater care and diligence by the Private Partner in both the construction and operating phase, and increase the useful life of the infrastructure. The Contracting Authority may establish a formal mechanism to survey the waste to energy facility to assess compliance with lifecycle requirements and to discuss and resolve performance related issues. Generally speaking, the Contracting Authority should avoid undue interference with the Private Partner's provision of maintenance and lifecycle services so as not to dilute the risk transfer benefits. *See also Suitability of design under Design risk.*	In mature markets, the Private Partner generally assumes the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and refurbishment work. *See also Disruptive technology risk.* Some projects in less mature markets have been procured on a design-build basis with a view to then passing over the assets to an operations concessionaire. In this case the Contracting Authority will need to ensure that it has sufficient warranties of the project components to allow the operator to manage the ongoing maintenance risk.
		●	[●]		**Throughput higher than forecast:** If waste throughput is higher than forecast and beyond the maximum quantities originally required by the Contracting Authority then, to the extent the waste to energy plant is technically capable of managing the increased volumes, the Contracting Authority may need to agree a mechanism to pay compensation in respect of increased maintenance costs.	
		●		●	**Existing assets in the project:** As regards any existing assets involved in the project, the maintenance risk should be allocated to the Private Partner to the extent the condition of the existing assets is known and future maintenance work can be assessed properly by an experienced contractor. In some cases, the Contracting Authority may need to retain the latent defect risk of some existing assets (and fit for	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					purpose standards may need to be appropriately adjusted). **Existing (or other) assets interfacing with the project:** The Contracting Authority may be required to guarantee and proactively manage the maintenance of existing facilities that integrate with the project (for example waste transfer stations used to bulk and supply waste) where these impact on availability or the delivery of the contracted amount of waste at the right time. *See also Suitability of design under Design risk.*	
	Interface	[●]	[●]	●	Although the Private Partner is typically best placed to manage interface risk, there may be instances where this risk needs to be shared with or borne by the Contracting Authority. Where certain availability criteria or performance indicators cannot be met due to actions by the Contracting Authority (or other government entities) including their staff, suppliers or sub-contractors, the Contracting Authority will bear the corresponding risk and the Private Partner may be entitled to relief (e.g. if caused by a MAGA or compensation event). For example, failure by staff employed by the Contracting Authority (e.g. waste collectors) to deliver the contracted amount of waste at the right time) may have an impact. *See also Access to the site and associated infrastructure under Land availability, access and site risk, Project management and interface with other works/facilities under Construction risk, Maintenance standards under Operating risk and Demand risk.*	
	Industrial action	●	●	●	*See Industrial action under Social Risk.*	
	Vandalism		[●]	●	Vandalism will usually be a Private Partner risk as waste to energy facilities would not normally allow access to the public on health and safety grounds so Private Partners should have in place effective perimeter fencing and security. This should be distinguished from protestor action which may constitute a shared risk, depending on the political climate. *See also Force majeure risk.*	Vandalism may be more of a risk where the political climate opposes the waste to energy project.
DEMAND RISK *The risk of demand levels being different to forecast levels; the consequences for revenue and costs; and government support measures.*	**General principles**				There are two issues to look at in the context of demand risk relating to waste supply: (i) the extent to which the Private Partner will accept risk in relation to the volume of waste supplied by the Contracting Authority; and (ii) the extent to which the Contracting Authorities should allow the Private Partner to size the relevant waste to energy facility so that it can handle volumes of waste in excess of the Contracting Authority's own requirements. Where a Contracting Authority wants the Private Partner to take or share risk on the volumes of waste that it supplies, the payment mechanism would typically be structured on a price per tonne basis coupled with a minimum waste commitment and/or exclusivity to waste streams controlled by the Contracting Authority. This approach is only practicable where the Private Partner has a high degree of confidence in the volumes of waste available to the Contracting Authority (through market studies or historical data) and, more importantly, is able to mitigate its risk by filling spare capacity with other waste that it can source itself and the gate fee that it will be able to charge for that waste (see below). Where the Private Partner does not have access to other waste sources (such as where the government controls the collection and disposal of all or most waste and there is no significant private sector market for industrial and commercial waste), then it may be unrealistic for the Private Partner to accept waste volume risk. In this case the payment mechanism may be structured on an availability basis. Where the Contracting Authority is considering allowing the Private Partner to build capacity in the waste to energy facility for third party waste, it should do a full assessment of the risk as part of its feasibility studies, including independent waste forecasting and having regard to the risk of the project failing if the Private Partner is ultimately unable to source sufficient volumes of third party waste (either at all or at the price envisaged in its financial base case). The Contracting Authority should also consider	In more developed markets, the Private Partner typically takes the risk of securing sufficient third party waste to fill additional capacity to make up a certain element of its revenue base case. It is common for waste to energy project in some markets to provide for the Contracting Authority to retain most of the demand and revenue risk and to pay the Private Partner an availability-based payment. Projects which purport to transfer demand risk typically involve some level of government support underpinning the risk transfer (such as a minimum volume guarantee), particularly in developing markets. In some markets, the lack of any other viable waste disposal solution in a particular area may give the private sector greater confidence to accept demand risk. In some markets, renewable electricity incentives that offer fixed or minimum prices for electricity generated may be available to the Private Partner. In some markets, Contracting Authorities with their own energy requirements have been able to de-risk power price risk for the Private Partner and hedge their own power price

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					the social and political ramifications of allowing the waste to energy facility to process third party waste in terms of the additional noise and pollution in the local area. Demand risk in relation to electricity also needs to be considered. Electricity from a waste to energy facility is base load capacity and has an effective zero cost as it is a by-product of the waste treatment process so it is highly unlikely that the electricity would not be dispatched to the grid. Demand risk therefore manifests itself through the market price payable for that electricity. Market prices for electricity in many markets can be highly volatile which can lead to the Private Partner significantly discounting the value of the electricity in its gate fee pricing. The availability of renewable incentives that provide a guaranteed price for electricity generated or finding other methods to mitigate electricity price risk can therefore provide significant value for money advantages for the Contracting Authority. Demand risk in relation to heat supply can also be mitigated through the ability to convert to electricity generation, although the Private Partner will need to ensure that its electricity offtake arrangements provide flexibility for increased electricity generation and the Private Partner will also be exposed to any negative differential between the heat price and the available market electricity price.	risk by offering the Private Partner a synthetic power price hedge at a fixed price through the payment mechanism. Other forms of price hedging may also be available in more developed markets but they are typically short term or come at a significant discount to anticipated market prices (i.e. power purchase agreements with price floors).
	Considerations	●			**Consequences of failures by the Contracting Authority to supply the committed volumes of waste:** The Contracting Authority will need to consider its potential liabilities if it fails to supply committed volumes of waste. The Private Partner will typically want to be compensated to ensure that it is in no better and no worse position than if the waste had been supplied, which implies compensation for the lost gate fee (less avoided operating costs) together with compensation for lost electricity income. The risk of paying compensation may be mitigated through requirements for the Private Partner to source substitute waste. *See also Operational resources or input risk under Operating risk*. **Potential implications of allowing capacity for third party waste:** Allowing the Private Partner to utilise the waste to energy facility for third party waste can have economic benefits for the Contracting Authority, i.e. through the Private Partner bidding a lower price to process waste from the Contracting Authority on the basis that it can re-coup revenue from the supply of third party waste. In effect, this is a cross-subsidy. The Contracting Authority may also be able to negotiate a share of the excess revenue where the waste plant generates third party income in excess of base case levels. However, as the Private Partner is relying on third party waste volumes to generate its target return, it may also seek rights to claim compensation from the Contracting Authority where third party income is affected by risks which are the responsibility of the Contracting Authority (such as changes in law). *See Change in law risk.*	
	Higher demand than anticipated		●		The Private Partner in principle takes the upside of demand fluctuations where demand risk is allocated to it. If actual demand is higher than forecast, there may be public perception issues if the Private Partner is thought to be making a higher profit than originally anticipated. If the waste to energy project faced public opposition originally then this perception is likely to be exacerbated. This could be politically uncomfortable for the Contracting Authority. In order to manage these issues, the parties may want to ensure the contract addresses such possibilities. For example, there may need to be a mechanism for sharing the profit above a certain level, either through payment to the Contracting Authority or by reduction in Contracting Authority gate fees. The Contracting Authority may also need to consider a mechanism to pay compensation in respect of increased maintenance costs that will accompany the increased demand. *See also Maintenance standards under Operating risk.*	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	Lower demand than anticipated			●	Although the Private Partner in principle bears the downside of demand fluctuations where it accepts demand risk in relation to the supply of third party waste to fill spare capacity at the waste to energy plant, the Contracting Authority should be mindful that the competitive bidding process may encourage bidders to be aggressive with their user and revenue forecasting. Over-optimistic forecasting can create financial problems for the Private Partner, and may lead to project failure. The Contracting Authority can mitigate the risk by commissioning its own demand analysis to assist it in evaluating bids and their underlying forecasts.	
FINANCIAL MARKETS RISK *The risk of inflation; exchange rate fluctuation; interest rate fluctuation; unavailability of insurance; and refinancing.*	**Inflation**	[●]		●	**Construction phase:** The risk of construction costs increasing due to inflation is typically borne by the Private Partner who will generally price in this risk in markets where such risk can be projected and quantified. Where this is not possible the Contracting Authority is likely to be asked to bear some risk.	The fluctuation of inflationary costs is a greater risk in less mature markets than it is in other markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the contract term. The variable component of the availability payment is typically defined by the consumer price index in mature markets. In other markets, the selected indexation method will need to reflect variable financing costs and variable inputs such as staff and materials. It will be more crucial in less mature markets to find appropriate indicators which mirror the project needs rather than a general consumer price index.
		●			**Operation phase:** Inflation risk in the operating phase is typically borne by the Contracting Authority. The Private Partner will look to be kept neutral in respect of both international and local inflationary costs through an appropriate inflation uplift or tariff adjustment regime. There is always a time lag in how quickly the indexation price increase is available to the Private Partner. On projects with a per tonne gate fee, this is achieved through an escalation factor on the gate fee payable by the Contracting Authority and third party users, which may be linked to the proportion of the gate fee referable to the fixed and variable operation and maintenance costs of the Private Partner. On availability-based projects, this is achieved by the availability payment typically including both a fixed component (where debt has been hedged) and a variable component which includes an escalation factor that accounts for rises in costs.	
	Exchange rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority may expect the Private Partner to bear the risk of an exchange rate fluctuation for a specific time period (e.g. 90 days) between submission of bid and financial close. Where there is a prolonged period between bid submission and financial close, the Contracting Authority may need to bear the risk. Where exchange rates are volatile or long term currency swap markets are illiquid, the Private Partner may have limited ability to accept the risk of exchange rate fluctuation and will seek to transfer the exchange rate risk to the host country by requiring that some or all of the contract price is linked to a foreign currency, such as USD.	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of a change in exchange rate. Exchange rate risk can be substantial in markets where exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets.
			[●]	●	Allocation of exchange rate fluctuation risk over the life of a project will depend on the relevant project jurisdiction and the nature of the project costs. In most PPPs, the Private Partner will bid and be paid (whether by the Contracting Authority or through user tariffs) in the domestic currency of that country. It may, however, incur costs in a foreign currency and such costs are translated into the bid price in the domestic currency on the basis of a particular exchange rate. In some PPPs, the Private Partner (and its lenders) may seek to transfer the exchange rate risk to the Contracting Authority/host country by requiring that some or all of the contract price is linked to a foreign currency, such as the USD. **Construction phase:** Exchange rate risk can arise where some or all of the construction costs are denominated in a currency different to the domestic currency. For example, where construction of the asset requires equipment that is manufactured overseas (which is common in waste to energy projects as particular process components (such as boilers, turbines and generators) are only manufactured in a few countries), adverse exchange rate movement may result in such equipment becoming more expensive than anticipated when converting domestic currency. This may use up the contingency the Private Partner has provided for in its financial arrangements (and priced into its bid) and/or require the Private	Exchange rate risks are more substantial in markets where exchange rates are more volatile or long term debt or swap markets are more illiquid (such as in countries with less developed capital markets). In more mature markets, the risk of currency fluctuations is typically not substantial enough to require the Contracting Authority to provide support and exchange rates risks are addressed solely through the Private Partner's own hedging arrangements. Where the exchange rates are more volatile, access to long term hedging may be either unavailable or too expensive. The likelihood of debt being denominated in a foreign currency is more likely in markets where financing by multilateral or international banks may be required (e.g. in less mature markets where there is limited depth in the local

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Partner to take on additional borrowing in the construction phase to finance these costs. **Operating phase:** As with construction costs, a similar risk may arise if the Private Partner incurs operating costs in a currency different to the currency of the PPP contract payments. For example, exchange rate risk can arise if the debt used to finance construction is denominated in a currency different to the domestic currency of the price paid under the PPP contract. Adverse exchange rate movements during the operating phase where the debt is being repaid will result in debt repayment in the foreign currency requiring a larger proportion of the Private Partner's revenue. This may result in the Private Partner having insufficient funds to service its debt and/or may eat into its projected equity return. **Mitigation:** To the extent the Contracting Authority does not cover exchange rate risk, the Private Partner typically looks to mitigate exchange risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure that the costs the Private Partner incurs are effectively fixed instead of fluctuating, and protects it against adverse rate movements. The cost of such hedging will be part of the contract price bid. Devaluation of a local currency beyond a certain threshold may also trigger a non-default termination, or a "cap and collar" subsidy arrangement from the Contracting Authority.	debt capital markets). *See also Strength of Contracting Authority payment covenant under Early Termination risk.*
	Interest rate fluctuation	[●]	[●]	●	**Rate change between bid and financial close:** The Contracting Authority normally expects the Private Partner to bear the risk of a change in the reference interest rate between submission of bid and financial close for a specific time period (e.g. 90 days). Any rate changes after this time period will be a Contracting Authority risk.	Although not recommended, there can be a significant period between prices submitted at bid stage and financial close. This may be more typical in less experienced markets and will make it difficult for the Private Partner to bear the risk of an adverse change in interest rate.
				●	**Rate changes during project:** The Private Partner will typically bear the risk of interest rate fluctuations over the life of the project but this will depend on the specific project and its jurisdiction. The Private Partner will seek to mitigate this risk through hedging arrangements, to the extent possible or necessary in the relevant market. These should ensure the interest rate the Private Partner is required to pay is effectively fixed instead of fluctuating, and protects it against adverse rate movements. The cost of such hedging will be part of the contract price bid.	In mature markets, the risk of interest rate fluctuations is not substantial enough to require the Contracting Authority to provide support and is typically addressed solely through the Private Partner's own hedging arrangements. In other (less stable) markets this may not be possible due to interest rate volatility or lack of long term hedging availability and in some circumstances it may be more appropriate for the Contracting Authority to retain interest rate risk if it can bear the risk more efficiently than the private sector.
	Unavailability of insurance		●		The responsibility for placing required insurances and the cost of doing so is typically borne by the Private Partner. However, PPP contracts typically also include provisions to address the risk of insurance becoming unavailable or only available at a cost which exceeds a level at which the Private Partner is able to price in reasonable contingency. This only applies if the uninsurability is due to factors unrelated to the Private Partner. Where neither party can better control the risk of insurance coverage becoming unavailable or more expensive, this is typically a shared risk. How this is addressed will depend on the specific project and jurisdiction. For the purposes of PPP projects, insurance is generally deemed unavailable to the extent (a) it is no longer available in the international insurance market from reputable insurers of good standing or (b) the premiums are prohibitively high (not just more expensive) such that contractors in the project jurisdiction are commonly not insuring such risk in the international market. As part of the feasibility study the Contracting Authority should consider what insurances are necessary and available at a reasonable premium and whether insurance might become unavailable (or too expensive) for the project given the location and other relevant factors. This is essential for assessing risk allocation for relevant events (e.g. force majeure risk allocation) and for the Private Partner to price its	The standard approach as regards unavailability is common in mature markets. In some less mature markets, if insurance becomes unavailable, the Private Partner is typically relieved of its obligation to take out the required insurance but, unlike the mature market position, the Contracting Authority does not become insurer of last resort and the Private Partner bears the risk of the uninsured risk occurring. If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) and the parties are unable to agree on suitable arrangements, then the Private Partner may need an exit route (e.g. the ability to terminate the project on the same terms as if the unavailability of the insurance were an event of force majeure).

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					risks.	In negotiating an insurer of last resort position, the Private Partner and, in particular, its lenders, will carefully assess the Contracting Authority's credit and its ability to meet liabilities if an uninsurable event occurs. This is a reason why this position may be more likely in economically stable markets. In less stable markets the parties may negotiate more over whether a particular insurance should be an obligation in the first place and how the risk (and its occurrence) might be managed (e.g. through the force majeure provisions). In less mature markets, wider reference criteria may be needed in defining unavailability (e.g. to address a situation where the pool of benchmark contractors is insufficient to draw a meaningful comparison). Projects in some locations may find it more difficult to get insurance for certain events under commercially viable conditions. In this case the parties will need to find a solution to unavailability at the start of the contract.
			●		**More costly premium:** Where the cost of the required insurance increases significantly (without becoming prohibitive), the risk is typically shared by the parties by either having an agreed cost escalation mechanism up to a ceiling or a percentage sharing arrangement. This allows the Contracting Authority to quantify the contingency that has been priced for this risk.	
			●		**Unavailability:** A standard approach in mature markets to manage unavailability of insurance is that where required insurances become unavailable, the contract typically requires the parties to try to agree a solution to manage the uninsurable risk and the Private Partner is relieved from breach of its obligation to take out the required insurance to the extent the unavailability is not due to its actions. If a solution is not agreed, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project as "insurer of last resort" (i.e. to effectively self-insure and/or put in place its own insurance cover and pay out in the event the risk eventuates). If the Contracting Authority chooses to assume responsibility for the uninsurable risk, it may require the Private Partner to regularly approach the insurance market to try to obtain the relevant insurance and the contract price should be adjusted to reflect that the Private Partner is no longer paying the corresponding insurance premium.	
			●		**Occurrence of uninsurable event:** With the mature market standard approach, if an uninsurable event occurs, the Contracting Authority may (a) terminate the contract (typically on a force majeure basis plus corresponding third party liability payments) or (b) pay the Private Partner the equivalent of insurance proceeds and continue the project. The approach to termination compensation reflects the general acceptance that uninsurability is neither party's fault and should be a shared risk.	
		[●]		[●]	**Unavailability due to fault:** Risk allocation will be affected by the reason for unavailability. As highlighted above, the provisions should only apply to the extent the Private Partner is not responsible for the insurance unavailability. Equally, if the unavailability is caused by the Contracting Authority's actions, the Private Partner may want to negotiate a right to terminate if a fundamental risk becomes uninsurable.	
	Refinancing			●	There are two key risks associated with refinancing (the changing or replacing of the existing terms on which the Private Partner's debt obligations have been incurred): (i) the risk that a project will be unable to raise the required capital to refinance a project at a given point in time; and (ii) the risk that a refinancing of debt will create additional project risks (e.g in terms of potential increased liabilities for the Contracting Authority and increased financial instability of the Private Partner). The risk of failing to raise required capital will arise in projects where the Private Partner (a) needs to seek a rescue refinancing to reschedule its borrowings if it is struggling financially, or (b) needs to replace short term (mini perm) financing which may have been the only financing option available to (or desirable for) the project initially. This is typically a Private Partner risk. Mitigation measures can include, in the case of mini perm financing, raising debt capital that has a repayment schedule that is matched to the PPP contract and project revenues available over the period of the PPP contract or by structuring the debt in several tranches of different tenors so that refinancing risks are smaller but arise more frequently. Refinancings may also occur where the Private Partner wants to take advantage of better financing terms available in the market (e.g. where the market recovers after a global financial crisis or after construction completion when the project is perceived to be less risky by funders). The risk of a refinancing creating additional project risks will be a risk for both the Private Partner and the Contracting Authority. The Contracting Authority needs to ensure that a refinancing does not	Refinancing risks will ultimately depend on the depth and liquidity of the relevant capital markets. In more developed capital markets, the risk of failing to raise required capital is unlikely to be a significant risk as long-term finance is available from the outset. Mini perm financing is more common in countries where the capital markets are less developed and there is a lack of a market for long term debt instruments. However, banks globally already face greater regulatory pressure which affects the loan tenor they can offer, and it is likely they will face increasing restrictions even in developed markets which may lead to shorter initial debt tenors and increased refinancing needs.
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RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					adversely affect it (e.g. by increasing the level of its potential liability for termination compensation above what would have been the case under the original financing documents/financial model or increasing the risk of such liability falling due if the financial stability of the Private Partner is affected). To mitigate this risk, the contract should specify that the Contracting Authority's consent is required in specified carefully drafted circumstances. Where the result of a refinancing is that the Private Partner's debt costs are reduced, resulting in greater profit and in turn a higher equity return (typically known as "refinancing gain"), it may be appropriate for the gain to be shared between the parties (e.g. to the extent it increases the original forecast equity return in the financial model). The Contracting Authority may expect to share a percentage of the refinancing gain (e.g. 50%) where public funds are being used to pay for the PPP project. To ensure it does not miss out on an anticipated share of any refinancing gain, the Contracting Authority should ensure that all relevant definitions are carefully drafted. The way the Contracting Authority receives its share of the gain will depend on the nature of the refinancing and discussions at the time. Options include: (a) a lump sum upon the refinancing to the extent the Private Partner receives such amounts at the time of the refinancing; (b) a lump sum or periodic sums at the time of receipt of the relevant payments, or the receipt of the projected benefit (in the case of a payment per tonne model); (c) a reduced availability payment (in the case of an availability based model); (d) reduced per tonne gate fee (for projects involving an element of demand risk); or (e) by a combination of the above (in accordance with the applicable payment model). For a more detailed analysis of typical refinancing provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	It has become increasingly acknowledged in mature PPP markets that it would not be fair for the Private Partner to enjoy the entire benefit of a refinancing gain where it is not entirely responsible for the availability of improved financing terms (e.g. where the market recovers after a global financial crisis). In emerging markets, particularly for demand risk projects, there may be limited scope for the Contracting Authority to negotiate refinancing gain sharing if such gain is a key incentive for potential bidders. Refinancing provisions may not be included. This is more likely in untested "riskier" markets where the prospect of refinancing gain is a key driver to bidders' participation (as has been the case, for example, in projects in some sectors in the Philippines). As with more mature markets, the potential for sharing refinancing gain should increase as the PPP market becomes more established and perceived risks decrease.
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.*	**Private Partner failure/insolvency**			●	The Private Partner essentially bears the risk of failing to have the requisite technical or financial capability to deliver the project in accordance with the contract. However, as the consequences of such failures can lead to interruption in service and inconvenience to the Contracting Authority and users, as well as potential termination liabilities for the Contracting Authority, the Contracting Authority must carry out a thorough evaluation of each bidder to ensure that it selects the right partner to deliver the project, with whom it can develop the necessary long term partnership and meet any aspirations it may have as regards community engagement and local employment and skills development. This is particularly key in waste to energy projects involving new and untested technologies where the pool of sub-contractors may be limited. *See also Risk Allocation in PPP contracts in the Introduction and Sub-contractor failure/insolvency under Strategic/Partnering risk.*	
	Sub-contractor failure/insolvency			●	The Private Partner is responsible for its sub-contractors and bears any associated risks, unless the Contracting Authority imposes mandatory sub-contractors, in which case it may need to bear, or share, certain sub-contractor-related risks. However, the sub-contractors should form part of the Contracting Authority's evaluation of each bid for the reasons highlighted in relation to the Private Partner. Assessing the financial and technical capability of key sub-contractors is essential, particularly where the technical solution is new or relatively untested and the pool of potential replacement sub-contractors is limited. Particular care needs to be taken where a sub-contractor has ownership of critical intellectual property in relation to the chosen technology, in which case robust legal arrangements should be put in place to ensure that the project has access to that intellectual property if the sub-contractor abandons the project or becomes insolvent. Given this risk, it is also important to assess the capacity of any particular party to be involved in the construction of a number of waste to energy projects at any one time. *See also Risk Allocation in PPP contracts in the Introduction and see Private Partner failure/insolvency under Strategic/Partnering risk.*	This has proven to be a concern in the UK, for example, where the insolvency of key technology providers has caused serious delays and cost overruns in the construction of waste to energy projects.
	Change in Private			●	Complying with any contractual restrictions on change in ownership will be a Private Partner risk. The	In less mature markets, there is typically more restriction on

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	Partner ownership				Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved and that any restrictions on, for example, foreign ownership of critical infrastructure are not circumvented. As the project is awarded on the basis of the Private Partner's technical expertise and financial resources, it will also want to ensure key parties such as parent company sponsors (and sub-contractors) remain involved. The Contracting Authority will typically prohibit any change in the Private Partner's shareholding for a period (e.g. by a lock-in for the construction period or until a couple of years into the operating phase) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met. The Contracting Authority's desire for certainty of involvement of key participants will need to be balanced with the private sector's requirements for flexibility in future business plans. This is particularly in respect of the equity investor markets and the added benefits of allowing capital to be 'recycled' for future projects.	the Private Partner's ability to restructure or change ownership. Overly restrictive provisions may deter investment, so this needs to be assessed in terms of the benefits to the Contracting Authority of both ensuring sufficient competition in the bid phase, and enabling parties to recycle their investment into other projects in the jurisdiction. Once the project is operational, for example, it may be reasonable for financial investors seeking regular returns to invest in place of certain of the initial (e.g. construction party) sponsors.
	Permitted Contracting Authority step-in			●	The risk associated with Contracting Authority step-in depends on the grounds for stepping in and whether due to the Private Partner's fault or not. Step-in circumstances include emergencies involving the emergency services, intervention to protect against social and environmental risks and fulfilling a legal duty to provide essential waste services where the Private Partner is failing to do so. The scope and terms of the Contracting Authority step in is a key bankability point due to the potential impact on the parties' liability. **Private Partner fault:** If step in is due to Private Partner fault or an event it is responsible for, the Private Partner essentially bears the risk of costs incurred by the Contracting Authority (and itself). In some jurisdictions this liability may be capped. The Private Partner is usually given relief from performance of its affected obligations and may receive some payment in respect of its obligations. **No Private Partner fault:** In this situation, the Contracting Authority bears the risk and will be responsible for its own costs. The Private Partner will be given relief from performance of its affected obligations and be entitled to extensions of time and relief on the basis of a compensation event (except to the extent the cause falls under another provision (such as force majeure) in which case that provision will apply). It will be entitled to full payment subject to certain deductions and may also require a cost indemnity from the Contracting Authority. In each case, risk should be allocated in respect of later issues around interface between solutions implemented during step in and the Private Partner's planned delivery solution, as well as any other risks that are allocated to the Private Partner. For a more detailed analysis of typical Contracting Authority step-in provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	In some jurisdictions (e.g. France), step-in is only contemplated in a breach situation and the Private Partner typically bears all cost up to a certain percentage (e.g. 15%) of project costs. A termination right may arise if the situation subsists for a certain period (e.g. 6 – 12 months). In some jurisdictions, the Private Partner may receive full payment as if it was performing the service in full or partial payment to reflect the affected obligations. In each case this will be subject to deductions and could result in zero payment. In some jurisdictions (e.g. in some EU countries and Australia), the Contracting Authority may not accept any liability when stepping in due to a Private Partner breach or event which is the responsibility of the Private Partner, except in the case of gross negligence in an emergency step in, fraud or bad faith. The scope and terms of step-in will be particularly relevant for Private Partners in jurisdictions which are less predictable or have underdeveloped or less stable legal or regulatory frameworks as the Private Partner will be concerned to limit the Contracting Authority's potential effect on the delivery of the PPP project. It may only want to agree to such rights in projects in sectors and jurisdictions where the Contracting Authority is committed to ensuring continuous delivery of the essential public service and has demonstrable experience in such delivery
	Change in Contracting Authority ownership/status	●			The Contracting Authority should bear the risk of any change to its ownership/status which adversely affects the project, for example, where its financial covenant and credit are adversely impacted. The Private Partner will typically have a right to terminate if certain criteria are not met and be entitled to compensation.	In stable markets, this risk may not be specifically addressed in the contract if satisfactory statutory or constitutional protections are available to the Private Partner In less stable and untested markets, more specific provisions may be required particularly where the Contracting Authority is not a central government entity.
	Disputes		●		**Private Partner/Contracting Authority disputes:** The risk of disputes is a shared risk and the	Contracting Authorities will typically select domestic law

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					consequences will depend on the outcome of the dispute. To minimise the risk of uncertain and costly outcomes, the contract should expressly include a clear governing law (typically the domestic law of the Contracting Authority's jurisdiction) and choice of dispute resolution forum (courts or arbitration). Efficient and fair dispute resolution processes should be included which provide for an escalated procedure where matters cannot be resolved between the parties' senior management, resolution of technical disputes by an independent expert, and recourse to the chosen forum. If the contract does not contain appropriate procedures this is likely to deter potential bidders and their lenders as efficient dispute resolution is a key bankability issue. A failure by the Contracting Authority to follow contractually agreed processes may also have an adverse effect on private sector interest in other PPP projects in that jurisdiction. There may be investment treaties applicable to the PPP arrangements with foreign parties, but these are no substitute for proper dispute resolution provisions in the contract itself. The Contracting Authority may be expected to waive any privileges and sovereign immunities which it enjoys before local and foreign courts (such as immunity from any suits by the Private Partner). Transparency and public access to information about disputes may be an important factor in choice of forum. In some jurisdictions the legal process is public which contrasts with arbitration which is generally a confidential and private process. Where additional agreements govern the relationship between the parties themselves, consolidation of related disputes and the joinder of related parties may be appropriate. To reduce the risk of concurrent processes, the agreements should include similar dispute resolution clauses agreeing to this. The Private Partner should be obliged to continue with performance of the contract while the dispute is resolved and, if so, will bear the risk of failing to do so. For a more detailed analysis of typical governing law and dispute resolution provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	and local courts as the forum for disputes. This is for a variety of reasons including familiarity and compatibility with any concession/PPP legislation. It also minimizes the risk that local users and other stakeholders will bring claims in a different court. In jurisdictions with a less established and experienced legal system, the Private Partner is likely to want an established dispute resolution forum (such as a recognised arbitration centre for the particular region), rather than to rely on local courts. There may be circumstances where this option needs to be considered by the Contracting Authority as a necessary compromise in order to ensure the project is bankable. For the same reason, there may be certain cases where the Contracting Authority will consider having a foreign law as the governing law of the contract. Choice of forum may be restricted in some jurisdictions due to local law requirements (e.g. prohibiting referral of disputes to a foreign court or international arbitration, or being subject to a "foreign" law). This is particularly common in certain civil law countries where solely specific administrative courts are able to judge public authority decisions and/or contracts. Additionally, there may be local law limitations (under constitutional arrangements, public policy or otherwise) on contractually agreeing to waive sovereign immunity. There may also be reputational and political issues if a Contracting Authority is seen to exempt public sector projects from the jurisdiction of domestic courts.
				●	**Sub-contractor disputes:** The Private Partner is responsible for disputes with its sub-contractors. The Contracting Authority should avoid the risk of getting involved in expensive and time-consuming peripheral disputes with other parties. However, it may want to consider allowing certain disputes it has with the Private Partner to be joined with disputes on the same matter between the Private Partner and its sub-contractor where the forum for resolving the dispute is appropriate. Any assessment of the need for joinder provisions is likely to be fact-dependent.	
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.*		●	●	●	Responsibility for disruptive technology risk depends on the project circumstances. The Private Partner's obligation is to meet the output specification. If it fails to do so due to obsolescence of equipment or materials it is likely to suffer payment deductions and, above a particular threshold, may be at risk of termination. In this case it bears the risk of potentially having to replace relevant technological solutions (e.g. if the solution it has chosen is no longer supported). However, if the project is performing above any termination threshold, it is not generally possible for the Contracting Authority to require the introduction of replacement technology simply because more efficient technological solutions are available unless there is an agreed contractual mechanism for doing so. To address this, the Contracting Authority may consider imposing contractual obligations on the Private Partner to adopt and/or integrate with new technologies or to allow for other foreseeable developments. It may be appropriate additionally to agree a specific cost sharing mechanic under which the Contracting	Disruptive technology risk is coming under increasing focus in all markets. This is particularly the case in relation to technological changes relating to environmental protection and this area may require its own treatment in the contract (e.g. through specific treatment under the contractual variations mechanism and/or through other specific contractual obligations).

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					Authority can request technological upgrades with appropriate cost sharing according to the reason for the request (e.g. if the replacement solution will improve health and safety or have social/environmental benefits). The same considerations apply if the Private Partner wants to make a technological change which is not strictly necessary and it may be appropriate for the Contracting Authority to consider incentivising the Private Partner to propose changes which will be of public or environmental benefit. In this regard, however, it should be noted that waste to energy facilities involve large, possibly complex and bespoke, equipment and the scope of requested upgrades may be limited without significant disruption and cost. The Private Partner will seek to mitigate its potential exposure through clear contractual cost and improvement parameters, beyond which any changes will be treated as a Contracting Authority variation of the PPP contract and entitle the Private Partner to relief in accordance with the contractual variation mechanic. *See also Variations risk.* It is important to take into account that some disruptive technologies may have both upside and downside effects on a project, as well as efficiency or social and environmental benefits. It may therefore be appropriate to consider mitigating mechanisms in any contractual solution. In many jurisdictions changes can be made only in accordance with pre-agreed contractual mechanisms, to avoid third party challenges on the basis that the amendments are so substantial that the existing contract should be retendered.	
FORCE MAJEURE RISK *The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance.*	**Force majeure events**		●		Force majeure is typically treated as a shared risk where neither party is better placed than the other to manage the risk or its consequences. **Scope:** Force majeure is an event (or combination of events) outside the reasonable control of the contracting parties which prevents one or both parties from performing all or a material part of their contractual obligations. In some – typically civil law jurisdictions – the definition may require the event to be unforeseeable or not reasonably avoidable. Many jurisdictions have a concept of force majeure under general law and, particularly in civil law jurisdictions, this can limit the freedom of the parties to derogate from the scope of the legal concept and agree something different in the contract. However, most PPP contracts include specific force majeure provisions, whether they are civil law or common law governed, as this provides contractual certainty. The contract should be clear to what extent underlying law applies. **Approach:** Depending on the jurisdiction, the definition of force majeure may be an open-ended catch-all definition, an exhaustive list of specific events, or a combination of both. The open-ended catch-all definition is often seen in civil law-governed contracts and may also be more appropriate in markets which are less developed or stable and where there is little precedent or certainty. A non–exhaustive list of events may also be included. Qualifying events may be "natural force majeure" events (such as natural disasters and severe weather events, and possibly climate change events) and certain "political force majeure" events (such as strikes, war, government action etc). The exhaustive limited list approach is more common in developed and stable markets where the Private Partner has more certainty as regards the risk of events occurring and how it can manage them. It may be comfortable that events which might be force majeure in a less mature market (e.g. some types of industrial action) may instead be treated as relief events in a developed and predictable market. Under this approach, force majeure events are typically (but not necessarily exclusively) events which are uninsurable. Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; and (iv) discovery of any species-at-risk, fossils, or historic or archaeological artefacts. As market practice develops, certain climate change events might also be included. *See also Site Condition under Land availability, access*	The scope of force majeure will depend on the particular project and jurisdiction. In France, for example, the affected party is relieved from its obligations if force majeure prevents performance and French jurisprudence has defined the characteristics of a force majeure event as (i) beyond the control of the parties, (ii) unforeseeable and (iii) impossible to overcome. In less mature markets, the list of specific events is likely to be wider than in more mature markets and include natural risk events, which typically can be insured (e.g. fire / flooding / storm etc), and force majeure events which typically cannot be insured (e.g. strikes / protest, terror threats / hoaxes, emergency services action etc). The extent to which the risk will be shared or allocated to one of the parties will depend on its nature and on the particular jurisdiction.

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					and site risk and Climate Change event under Environmental risk. For a more detailed analysis of typical force majeure provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. **Risk qualification:** The Contracting Authority should consider whether it can limit its risk by carefully defining the events which qualify as force majeure, and/or qualifying or excluding them as appropriate. For example, in some projects earthquakes may only qualify as force majeure if they are above a specified seismic intensity. Alternatively, an event may only qualify if it has subsisted for a particular length of time. In some projects, risk is allocated to the Private Partner and/or shared for the first few months, and subsequently becomes a shared risk or Contracting Authority risk (with entitlement to terminate if the force majeure event continues for more than a defined time period (e.g. 6 – 12 months)). Using an open-ended definition of force majeure widens the risk shared by the Contracting Authority, but may be appropriate in some markets. The availability of insurance for certain events will be one of the main criteria in determining the extent to which an event should qualify as force majeure and/or how the consequences should be addressed. Certain risks may be more likely to constitute a force majeure event if they occur in one phase than another (e.g. events in the construction phase affecting materials supply).	
		●			**Contracting Authority political risk:** In some markets, certain political risk events may need to be allocated in full to the Contracting Authority because the Private Partner cannot reasonably be expected to bear any of the risk and/or because the Private Partner may price in such a high contingency in respect of the risk that it makes the contract unaffordable. Where the Contracting Authority bears the full risk of these risks, this may be addressed under the force majeure provisions but with "political force majeure" receiving different treatment to the shared risk force majeure events. Alternatively, these political risks may be treated in a separate provision under the heading of "material adverse government action" or similar (which may also include other forms of event for which the Contracting Authority is deemed solely responsible). *See also MAGA risk.*	In certain markets, it may be necessary to differentiate how similar types of risk events are treated, depending on where they occur. For example, in more politically volatile jurisdictions, war events might be wholly a Contracting Authority risk where they occur within the country, but a shared risk otherwise. *See also MAGA risk.*
	Force majeure consequences		●		The basic principle of force majeure is that the risk is shared and each party bears its own losses. However, there may be circumstances where it is appropriate for the Contracting Authority to provide relief to the Private Partner, provided the Private Partner has made reasonable efforts to mitigate the force majeure effects and to the extent it was not responsible for the event. In addition to granting the Private Partner relief from breach of its affected obligations, certain time or cost relief may be granted (sometimes where a particular threshold of costs or time delay has been reached). This will depend on the phase in which the event occurs and should be considered at the time, together with the impact of the event on the Contracting Authority and the options available to it. Termination following prolonged force majeure (e.g. 6 – 12 months) may also be available. If the Private Partner has the ability to terminate the PPP contract on the basis of a prolonged force majeure event, the Contracting Authority may want to include an option to require the PPP contract to continue, provided that the Private Partner is adequately compensated. This approach is more likely to be encountered in a more established PPP market. **Construction phase:** The consequences for the Private Partner of a force majeure event in the construction phase are that it may be unable to meet all or part of its contractual obligations, in particular key dates (such as the operation commencement date); may suffer delayed and/or lost revenue; and may incur additional financing and other costs (e.g. in relation to mitigating the event), both during and after the force majeure event. As well as relief from breach of the affected obligations, the Contracting Authority may decide to grant certain cost relief (either while the force majeure event subsists or through the operating phase if the contract continues) on the basis that the Private Partner has limited means to absorb additional costs and it may be in both parties' interests to avoid the Private Partner going	The approach to cost and deductions relief varies across jurisdictions. In developed markets (particularly some civil law jurisdictions) Contracting Authorities may be more willing to make compensation payments during a force majeure event. In some jurisdictions, the contract will expressly identify only specific force majeure risks for which the Contracting Authority will grant financial relief (e.g. raw materials price volatility). It may not be as common in less mature markets for cost compensation to be paid during force majeure unless caused by an event deemed to be a political risk for which the Contracting Authority is wholly responsible (e.g. a MAGA event). *See also MAGA risk.* Force majeure relief should be distinguished from relief available under any hardship doctrines *(see Glossary definition)* existing under the underlying law of the project jurisdiction.

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					insolvent. For example, it may elect to make a compensation payment at the time or, if the contract continues, grant extensions of time and/or an extended operating period so that the Private Partner has the opportunity to recoup lost revenue and costs. Alternatively, availability payments could be increased or, in a project involving an element of demand risk (subject to law), an increase in tariffs permitted. **Operating phase:** The consequences for the Private Partner of a force majeure event in the operating phase are that it may be unable to meet all or part of its contractual obligations (including failing to deliver the service); may suffer delayed or lost revenue; may incur additional financing and other costs; and may possibly be unable to service its debt repayment obligations. Again, in addition to relief from breach of its affected obligations, the Private Partner may be granted grant certain cost relief on the same principles as described in the construction phase. In an availability payment model, it may also grant payment deductions relief or relaxed performance standards and in a demand-based model an increase in tariffs permitted. **Insurance:** Project insurance (physical damage and loss of revenue coverage) will be a key mitigant in respect of physical damage, to the extent it is available, and an important consideration in respect of compensation and how to continue the project. For example, if the waste to energy project is destroyed prior to handover as a result of force majeure, the Private Partner will typically be obliged to re-build it at its own cost, to the extent the risk is insurable. Design resilience is also an important mitigating factor, for example, for projects with seasonal weather such as monsoon or where earthquakes are common.	
MATERIAL ADVERSE GOVERNMENT ACTION RISK (MAGA) *The risk of actions within the public sector's responsibility having an adverse effect on the project or the Private Partner.*		●			In projects where a MAGA provision is appropriate, the Contracting Authority bears the risk of specific "political" actions having a material adverse effect on the Private Partner's ability to perform its contractual obligations, or on its rights or financial status. The Contracting Authority is responsible for costs and delays and is typically at risk of termination for prolonged MAGA events. Although not all jurisdictions use the term "MAGA", many have equivalent provisions under different terminology. MAGA events typically include: deliberate acts of state such as outright nationalisation or expropriation in relation to the PPP project; a moratorium on international payments and foreign exchange restrictions; certain governmental acts (such as not granting essential approvals where the Private Partner is not at fault or, in a waste to energy project relying on an element of third party demand, building a competing waste to energy project adjacent to the project waste to energy facility); and politically-inspired events such as national strikes. Change in law is also a form of MAGA. Although some of these events may not seem as obviously within the Contracting Authority's control itself as others (e.g. if they relate to other arms of government), market practice is that they are accepted by the Contracting Authority. This is because passing them to the Private Partner may result in it being unable to enter into the contract or pricing in such contingency that the contract is unaffordable. The list of events will depend on the individual project circumstances and the position agreed on force majeure events, and the Contracting Authority can limit its risk by qualifying relevant events by reference to a clearly defined materiality threshold. The process and consequences of MAGA are broadly similar to force majeure as regards the parties trying to find a solution and how the Private Partner may be compensated. The key difference is that the underlying principle behind MAGA relief is to put the Private Partner back into the position it would have been in had the MAGA event not occurred. The parties may terminate for prolonged MAGA, with compensation payable on a similar basis to Contracting Authority default termination. The Contracting Authority may be able to reduce its liability in some cases if it can negotiate different treatment for MAGA events which are not as clearly within its own control and influence. For a more detailed analysis of typical MAGA provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*. *See also MAGA/Change in law termination*	MAGA type clauses are more likely in less predictable and stable markets where the Private Partner (and its lenders) may require a clear regime to address specific government-related actions for which the Contracting Authority is responsible. This may be because of an actual or perceived likelihood of certain MAGA events occurring (e.g. war or civil unrest), or a lack of track record of PPP contracts being run successfully free from political interference over long periods of time and across political cycles. In mature politically stable markets, the Private Partner (and its lenders) are often comfortable that the type of MAGA risks likely to arise are limited. Instead of being detailed in a specific Contracting Authority risk clause, they can be addressed through the shared risk force majeure provisions and compensation event type provisions (and the general right to terminate for Contracting Authority default in limited circumstances). Investors and lenders may be able to obtain political risk insurance in respect of some of these types of risks. This is more common in politically young or unstable markets. Some jurisdictions are more politically volatile internally than others and certain political risks will be treated differently. For example, war events may be treated as MAGA if they occur within the country, and shared risk force majeure if outside it.

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					under Early Termination risk.	
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.*	**Compliance with applicable law**	●		● [●]	Compliance with applicable law and mandatory regulation is each party's risk. The Private Partner is typically subject to an express contractual obligation and will be in breach if it does not comply with applicable law, subject to change in law relief. The contract must be clear what laws and other mandatory regulations and industry codes the Private Partner is obliged to comply with. This is essential not only so the Private Partner can price its compliance, but also in order to determine what constitutes a change in law so that change in law risk can be allocated effectively. Compliance by third parties is likely to be a Contracting Authority risk where it has failed to enforce compliance and there is an adverse effect on the project (e.g. user's failure to comply with environmental regulations, such as recycling requirements). *See also Maintenance Standards under Operating risk.*	
	Change in law (and taxation)	●	[●]		The Contracting Authority primarily bears the risk of unexpected changes in law which were not in the public domain before a specified cut-off date in the bid phase and which cause the Private Partner's performance of its contractual obligations to be wholly or partly impossible, delayed or more expensive than anticipated (or impact its investors). This is because the Private Partner has contracted to provide the specific waste to energy project at a specified price based on a known legal environment and typically has limited means of offsetting adverse consequences of unexpected law changes (except to the extent it may be able to pass on an increase in cost to third party users in relation to third party waste capacity). As change in law may also benefit the Private Partner, change in law clauses are often reciprocal, to ensure the Contracting Authority benefits from the "positive" financial consequences of a legislative change. The Contracting Authority's risk can be mitigated by ensuring that the contract clearly defines what constitutes a change, the relevant cut-off date and what constitutes being in the public domain. This will vary according to the nature of the project and jurisdiction concerned. *See also Bespoke mechanisms under Change in Law risk.* There are various approaches to risk allocation as briefly summarised below and the degree of risk sharing will depend on the type of change and the approach suitable to the maturity and stability of the relevant legal market. Any risk that is transferred to the Private Partner is likely to be reflected by contingency pricing in its bid which may result in the Contracting Authority paying for something that never happens. The Contracting Authority should be mindful of how it will fund changes in law which are at its risk should they arise. Where the waste to energy facility is processing third party waste, the Contracting Authority will usually only be responsible for a proportion of the change in law cost linked to the proportionate usage of the facility by the Contracting Authority for the processing of its waste, with the Private Partner being required to take the risk on recovering the balance from its third party waste suppliers. For a more detailed analysis of typical change in law provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	Change in law risk may be treated as a MAGA event if the treatment agreed for this form of political risk is the same as for other MAGA events. Generally speaking, where a detailed approach to risk allocation is involved and where the consequences do not lead to termination, change in law is best dealt with separately – this is more typical is established markets. *See also MAGA risk.* In defining a change it may be appropriate for the definition to include any modification in the interpretation or application of any applicable law. This is particularly likely in common law jurisdictions. As highlighted by the different approaches, in mature legally stable markets the Private Partner will likely have less protection than in jurisdictions where changes in law are less predictable and/or more likely due to underdeveloped or less stable legal or regulatory frameworks. Approach (a) is often seen in developing markets with less established legal environments as it may be the only way that private finance can be raised and should also enable the Private Partner to offer a more competitive price. Approach (b) has also been seen in more developed markets and some emerging markets. Approach (c) is seen in more experienced PPP markets. While it will involve some contingency pricing, this approach is considered generally more beneficial to the Contracting Authority, but may not be bankable in every jurisdiction and should be contemplated on a case-by-case basis. Even in markets using this approach there will be instances where this risk allocation is not fully achievable due to the nature of the PPP project and the extent to which the applicable legal and regulatory regime is settled.
		●			**Approach (a) Contracting Authority risk:** The basic approach is that the Contracting Authority bears all the risk of change in law and provides full relief to the Private Partner.	
		●	●		**Approach (b) Limited risk sharing:** A more nuanced approach is for the Private Partner to accept a certain annual monetary threshold up to which it accepts any unexpected change in law risk and above	

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					that threshold the Contracting Authority bears the risk/cost. This enables the Private Partner to price the risk it bears.	Past models (including in the UK) used to require the Private Partner to assume, and price for, a specified level of general change in law capex risk during the operational period, before compensation would be paid. The UK Government ultimately decided that this allocation did not represent value for money and reversed this position. Some countries which adopted the UK model had already taken this approach. Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise - changes in gate fee may be possible but this may have a detrimental effect on achieving recycling/landfill diversion targets. Although a Contracting Authority may bear all change in law risk at the start of a PPP program, once a track record and/or legal environment is established in its jurisdiction which gives the private sector greater confidence in the stability and predictability of the regime, Contracting Authorities procuring new PPP projects may be able to explore some risk transfer to the Private Partner. A termination right as a consequence of change in law is not considered necessary in all jurisdictions. In civil law jurisdictions it is common for the Private Partner to have a specific right to terminate the contract where performance of the PPP contract would entail a breach of law that cannot be remedied by a Contracting Authority variation. This is not usually seen in common law jurisdictions with established legal frameworks as the Private Partner and its lenders are able to take a view that it is highly unlikely that a change in law would result in such drastic consequences without means of holding the government accountable. In civil law jurisdictions, Private Partners may sometimes rely on underlying legal principles such as hardship doctrines *(see Glossary definition)* for relief. However, widespread market practice across civil and common law jurisdictions has shown that the private sector is unwilling to enter into PPP contracts on such a basis as both lenders and sponsors require express contractual certainty in relation to the potentially significant impact of changes in law.
			●		**Approach (c) Advanced risk sharing:** With this approach the Private Partner is kept whole in respect of unexpected changes in law which are: (i) discriminatory (e.g. to the project or the Private Partner); or (ii) specific (e.g. to the waste sector or to investors in waste businesses); or (iii) require capital expenditure after construction completion (i.e. in the operating period). (Applicable law may protect the Private Partner from unexpected changes in the construction period if the relevant legal regime provides that changes in law affecting capital expenditure during construction do not apply retrospectively.) With this more detailed approach the Private Partner bears (some of) the general business risk that applies to all businesses (including operational expenditure or taxation affecting the market equally) and can absorb this in part through the indexation provisions typically contained in the pricing mechanism (or possibly through increased per tonne gate fee in a waste to energy project involving an element of demand risk).	
			●		**Bespoke mechanisms:** It may be appropriate to have bespoke mechanisms for certain changes in law, such as those relating to climate change and environmental protection (e.g. which increase or reduce the amount of waste available for recycling). Market practice is still developing in this regard. A change in environmental legislation may have general application but may have a disproportionate effect on the waste sector. *See also Climate change event under Environmental risk and Maintenance standards under Operating risk.* Where the Private Partner benefits from specific incentive schemes in relation to power or heat production from the waste to energy facility (e.g. feed in tariffs), the Private Partner will seek specific protection in relation to any adverse changes in those schemes. In recognition that the environmental law landscape has shifted quickly in recent years, practice has developed in the UK, for example, to identify a list of "foreseeable" but unquantifiable laws which parties agree are likely to come into effect during the construction phase but which are sufficiently underdeveloped that it would not represent best value for money for the Private Partner to bear the risk and price for it. Changes relating to these items will be at the Contracting Authority's risk.	
		●			**Consequences:** The Private Partner should always be entitled to relief from breach of contract where a mandatory change in law occurs which conflicts with an existing obligation or would make compliance illegal (and/or impossible). The contract typically contains a mechanism by which the Contracting Authority is deemed to request a corresponding contractual variation of the relevant obligation. The nature of the cost relief or revenue compensation given to the Private Partner will be as described for a compensation event. Alternatively, the Private Partner may be entitled to a right to terminate (typically on a Contracting Authority default basis). In a waste to energy project involving an element of third party waste capacity the Contracting Authority may seek to require the Private Partner to use reasonable efforts to pass on a proportion of any increased costs to the relevant third party waste suppliers. In certain cases, the Contracting Authority has limited its liability for cost and revenue compensation to a proportion of the cost referable to the proportion of the plant capacity used to process its waste. The acceptability of this to a Private Partner is likely to depend on its view of the wider waste market and whether it can take the risk of being able to pass on those costs to its third party waste suppliers.	
		●			**Stabilization provisions:** Some projects may also provide for a stabilization clause that entrenches certain legal positions (such as the current tax regime) against any future changes in law. This may require a level of parliamentary ratification of the project contract.The stabilization method is generally not favoured by governments or non-governmental organisations (e.g. because the concept of Private	

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					Partner immunity from changes in environmental protection laws is unsatisfactory) and the Contracting Authority should instead seek contractual mechanisms to address such matters.	
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.*	**Contractual termination provisions**		●		The allocation of risk for early termination depends on the termination grounds and these also determine the financial consequences of termination. The key risks relating to the contract being terminated early are that the Private Partner is deprived of its expected revenue stream to repay the debt it incurred developing the project and the project asset or service ceases to be delivered for the Contracting Authority. The complexity and variety of termination circumstances result in parties in all jurisdictions almost always seeking to include clear contractual mechanisms in the PPP contract which set out comprehensively what circumstances may give rise to termination, who may terminate and what the consequences of termination will be for the Contracting Authority and the Private Partner, as well as for lenders or other key third parties. Without such certainty, bidders and potential lenders may be deterred from bidding. The Contracting Authority should not be "unjustly enriched" by receiving an asset for which it has not paid the expected contractual price. This is an underlying legal principle in most jurisdictions and should be taken into account in the drafting of applicable termination compensation provisions. The Contracting Authority, besides making a payment, will need to consider the other risks associated with termination, such as the reputational risks, continuity of service delivery, completion of the works or maintaining the asset itself, or re-tendering the project (or a mix). For a more detailed analysis of typical early termination and termination payment provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition*.	The increasingly market standard approach in all jurisdictions is to include contractual termination provisions in the PPP contract. However, in some civil and common law jurisdictions there may be underlying laws addressing certain termination rights and their consequences which apply without the PPP contract having to include termination provisions. While relying on underlying law rather than express contractual provisions is an approach less likely to be seen in common law jurisdictions, there can be certain exceptions as described, for example, under *Contracting Authority default termination and Voluntary termination by Contracting Authority*. Furthermore, if the transaction is financed in a shariah-compliant manner (such as through an ijara (lease) structure) consideration must be given to how ownership will be transferred following the termination. This is typically achieved through a Purchase Undertaking or Sale Undertaking of the underlying assets. In less developed PPP markets, it may not be easy to re-tender a project if there is no pool of alternative contractors to take on the project.
	Contracting Authority default termination	●			**Termination right:** The Contracting Authority bears the risk of termination for breaches which have a material adverse effect on the Private Partner or the project (e.g. expropriation in relation to the PPP project and failure to pay). The test is typically that the default event has made it impossible for the Private Partner to perform the contract or rendered the continued relationship untenable and any materiality threshold should be clearly defined. *See also MAGA risk.* To mitigate the risk of termination, the Contracting Authority should ensure that grace periods are built in (e.g. for non-payment) so that it has the opportunity to rectify the default and reduce the risk of a termination right arising purely from, for example, administrative error. **Compensation:** Although the exact approach depends on the relevant jurisdiction, the underlying principle is that the Private Partner should be fully compensated by the Contracting Authority as if the PPP contract had run its full course. The Private Partner would typically receive an amount in respect of senior debt (including where applicable hedge break costs), junior debt, equity investment and a level of equity return which from the Contracting Authority's perspective should where possible reflect the actual performance level of the Private Partner. Redundancy and sub-contractor break costs will also be included. The Contracting Authority should mitigate the amount it pays out by setting off deductions available to the Private Partner in respect of, for example, insurance proceeds, bank accounts, hedge break entitlements and surplus maintenance funds.	There are some common law jurisdictions (e.g. Australia) where the Private Partner is expected to rely on its common law rights to terminate for Contracting Authority default instead of having an express contractual right. This may be because termination for Contracting Authority default is such a fundamental step with enormous business and other ramifications for the Private Partner that the focus is instead on the enforceability of the contractual payment and time/cost compensation provisions applicable to breaches by the Contracting Authority. Similarly, in civil law jurisdictions the PPP Contract may be silent, and the Private Partner may need to apply to an administrative court to request contract termination (as was the case in earlier PPP contracts in France). Relying on underlying law is likely to deter bidders in markets where there is insufficient legal precedent and certainty. Where a waste to energy facility is located in a state controlled electricity market with a government owned power offtaker, the Private Partner may require termination rights linked to any failure to pay for electricity or other fundamental breach of the power purchase agreement by the government owned offtaker. *See also MAGA risk.*
	MAGA / Change in	●			**Termination right:** Some PPP contracts may contain specific MAGA provisions which entitle the	Markets which are politically and legally stable are less

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
	law termination				parties to terminate the PPP contract if there is a protracted MAGA event. The type of political risk events addressed by a MAGA provision may include the type of Contracting Authority defaults outlined under *Contracting Authority default termination* and also change in law where there is no solution agreed to continue the contract. This could mean that a PPP contract (i) only has a MAGA provision, (ii) only has a Contracting Authority default provision, or (iii) has a combination of the two and/or separate provisions addressing specific political risk matters such as changes in law. *See also MAGA risk and Change in law risk.* **Compensation:** The same principles will apply as outlined for Contracting Authority default termination but some jurisdictions may only allow the Contracting Authority to terminate for protracted MAGA-style events by implementing a voluntary termination. The Contracting Authority may be able to negotiate a reduced termination payment in respect of "no fault" MAGA events. *See also MAGA risk and Voluntary termination by Contracting Authority under Early termination risk.*	likely to have separate MAGA termination provisions as the Private Partner and its lenders will be comfortable relying on a Contracting Authority default termination provision, combined with a shared risk force majeure provision and other contractual provisions (e.g. compensation events) which provide time and/or money relief to the Private Partner in relevant circumstances of Contracting Authority responsibility.
	Voluntary Termination by Contracting Authority (Also commonly referred to as termination for convenience, public policy or interest. termination at will or unilateral termination.)	●			**Termination right:** In return for having the right to terminate for convenience, the Contracting Authority bears the risk of this event. It should have fully considered and prepared for termination before deciding to exercise its right to terminate. The notice period should be the minimum sufficient for both parties to make appropriate arrangements in respect of the handback of the project and to facilitate compliance with handback obligations. **Compensation:** The Private Partner's prime concern will be to ensure it is fully compensated for such early termination and able to comply with its handback obligations. The termination payment will be based on the same principles as for Contracting Authority default.	In some jurisdictions (more typically civil law) the Contracting Authority may be entitled to terminate the PPP contract on the grounds of public interest even without an express contractual right. This inalienable right is rarely invoked but the private sector (Private Partner, sub-contractors and lenders) will still require the PPP contract to cater for this low probability but high risk event as comprehensively as possible. The Contracting Authority may be required to substantiate the validity of the public interest ground (for instance, termination may not be permitted purely on financial grounds). In some jurisdictions (e.g. France) it is not possible to contractually waive the right to unilaterally terminate in the public interest, but it is possible for parties to agree in advance the procedure and consequences of such termination. In practice, these are usually identical to voluntary termination, or even a Contracting Authority default scenario. This is because the Private Partner is not responsible for, nor capable of mitigating, a public policy-driven decision to terminate unilaterally.
	Force Majeure and Uninsurability termination		●		**Termination right:** The risk of a force majeure termination arising is shared by the parties. Typically it will arise after 6-12 months of prolonged force majeure where the parties are unable to agree a solution to continue with the project. **Compensation:** The Contracting Authority pays termination compensation to the Private Partner reflecting the principle that force majeure events are neither party's fault and the financial consequences should be shared. This is not "full" compensation as this would result in the Contracting Authority bearing all the financial pain. Typically outstanding senior debt (including where applicable hedge break costs), initial equity, redundancy payments and sub-contractor break costs will be paid, less any applicable deductions as on Contracting Authority default termination). The Private Partner will lose all its forecast equity return (i.e. its anticipated profit) but the payment will be sufficient to repay all of its outstanding senior debt which will help address bankability concerns as to whether the debt will be kept whole in this termination scenario. The equity element will serve as a buffer for lenders if the termination payment does not cover 100% of the outstanding debt.	In some (typically less developed) markets, the Contracting Authority may succeed in negotiating paying no termination compensation in respect of certain natural risks which are insurable (and would reasonably be expected to be insured against as good operating practice), or a reduced amount reflecting insurance payments received (or receivable) by the Private Partner. This to some extent reflects the practice in more developed markets where these type of events may instead be classified as relief events which entitle the Private Partner to time relief only (but no ultimate right of termination). This will of course depend on the risk assessment by the Private Partner and its lenders. In less mature markets it is not uncommon for the senior debt to be guaranteed as a minimum in every termination scenario, and for rights of set-off below that figure to be

RISK CATEGORY AND DESCRIPTION		RISK ALLOCATION			RATIONALE AND MITIGATION MEASURES (INCLUDING GOVERNMENT SUPPORT ARRANGEMENTS)	MARKET COMPARISON SUMMARY
Risk	**Sub-category**	**Public**	**Shared**	**Private**		
						restricted.
	Private Partner default termination			●	**Termination right:** The Private Partner bears the risk of termination by the Contracting Authority for serious failures by the Private Partner connected to delivering the PPP project. Termination events may be performance-related or relate more specifically to the financial status and corporate activity of the Private Partner. In order to mitigate the risk of termination, the contract should clearly define the default events and they should have reasonable in-built tolerance levels so that an appropriate threshold of poor performance has to be reached before termination rights arise. The opportunity to rectify should be given where feasible. The Contracting Authority can mitigate the risk of a termination payment arising as it has control over serving the termination notice that triggers it. It also has the ability to mitigate against the risk of Private Partner default even before the PPP contract is signed, by careful selection of the winning bidder. *See also PPP Project Preparation and Delivery in the Introduction.* **Compensation:** The Private Partner will typically be entitled to a compensation amount equal to a pre-set percentage (around 80 –100%) of the scheduled outstanding debt, minus applicable deductions, and no equity compensation. The aim of a lender "hair cut of less than 100% debt is to incentivise lenders to conduct proper due diligence and exercise their monitoring and step-in rights to ensure the Private Partner delivers the project satisfactorily so that it avoids termination and can repay the whole of the lenders' outstanding debt. Alternatively, a market value retendering of the contract may take place (or be deemed to take place) and the compensation paid to the Private Partner will be the price tendered (or deemed tendered), less applicable deductions. A third alternative is for the Private Partner to receive a payment based on book value.	In some civil law jurisdictions, insolvency laws may have an impact on the right to terminate the PPP in the event of insolvency of the Private Partner (or its shareholders). A debt-based compensation method is the most common approach in emerging markets and availability-based PPP projects in jurisdictions such as France and is also seen in Germany. The market value retendering approach is more likely in a mature PPP market where there are likely to be a number of potentially interested purchasers in the relevant sector. Lenders to PPP projects in certain jurisdictions or in relation to certain assets may be reluctant to rely on a market-based valuation method for fear of undervaluation or underpayment. This is particularly likely to be the case in emerging markets where there is a limited PPP track record and a limited market. Some European jurisdictions have followed a book value approach but this may not accurately reflect sums owed and is not as common. In less mature markets it is not uncommon for a high percentage or the full senior debt to be guaranteed as a minimum in every termination scenario, and for rights of set-off below that figure to be restricted. The higher percentage haircut is seen in markets where the risks in respect of project failure and of the ability to rescue it are considered low (e.g. from a technical or resourcing perspective, or because the market is known), and the overall security package available to Lenders is otherwise sufficient to cover their debt. Lenders in such markets (e.g. in some projects in the US) may alternatively accept no compensation for the same reason but this is not common practice. If available in the relevant jurisdiction, lenders will seek a direct/tri-partite agreement with the Contracting Authority. The purpose of this is to give lenders step-in rights if the Contracting Authority serves a default termination notice or if the Private Partner is in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the Private Partner and seek a resolution to rescue the project and the right to ultimately novate the project documents to a suitable substitute private partner.
	Strength of Contracting Authority payment covenant	●		[●]	The Contracting Authority bears the risk of making the relevant termination payment on time and in the amount required. To mitigate the risk of failure, it will need to assess whether it will be able to pay a lump sum if such a large payment is not budgeted for or does not have backing from its government treasury department. Payment over time may be preferable and the Contracting Authority should in any event try to negotiate a reasonable grace period long enough to raise the necessary funds. The Private Partner and its lenders will typically want to close off their exposure to a terminated PPP project and	In jurisdictions where the Contracting Authority's credit is weak or uncertain, additional credit support may be sought by the Private Partner and its lenders. This may be the case, for example, in less stable regimes or emerging markets or in projects where the Contracting Authority is not part of central government. Support may be available via

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Risk	**Sub-category**	**Public**	**Shared**	**Private**		
					avoid Contracting Authority credit risk as soon as possible. It is likely that they will favour a lump sum payment, particularly on Contracting Authority default termination where the most likely cause of termination is failure to pay. In some cases, the Contracting Authority may be asked to provide credit support of its payment obligations. Lenders may be reluctant to release security interests held over the PPP project assets until compensation payments have been made in full. This may make the transfer of relevant assets back to the Contracting Authority difficult. In certain circumstances, the Contracting Authority may be able to negotiate an interim solution at the time of the termination, such as an arrangement whereby it has a right to access the PPP project assets during the period from the termination date until all termination compensation is paid, so long as the Contracting Authority complies with the payment terms with respect to such compensation. This approach is unlikely to be agreed at contract signature and certain issues will need to be clearly addressed (such as liability for damage to the asset while in the Contracting Authority's use).	multilateral or export credit agencies or central government or sovereign guarantees. Lenders and investors may seek political risk insurance to cover the risk of the Contracting Authority or any government guarantor defaulting on its payment obligation. A key concern for lenders in some jurisdictions relates to the requirement for parliamentary approval of appropriations in respect of contingent liabilities under project contracts. In the Philippines, for example, the government requires a two-year grace period for the payment of termination compensation as this is the maximum period of time for the parliamentary appropriation process. In less mature markets, issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination. Release of security interests may not be a relevant concern in some jurisdictions, such as France, where lenders would not typically take security over the project assets as this would only give them limited rights. They would more usually take security over the Private Partner itself.
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 Private Partner bears the risk of the project assets and land being handed back to the Contracting Authority in accordance with the contract and meeting the required handback conditions. This is linked to maintenance of the assets during the contract and may be complex given the need to define relevant asset standards. The circumstances around handback will vary from one PPP contract to another and will depend on matters including: the Contracting Authority's intentions with regard to post PPP usage, the nature of the asset (e.g. waste to energy facilities may be usable for much longer than the initial PPP project duration), the stage at which the PPP contract comes to an end, whether termination occurs during construction or operation and any requirements under underlying laws in the relevant jurisdiction. To mitigate the risk of unexpected consequences, the contract should set out the requirements and process, including the Private Partner's obligations to facilitate an effective handover, hand over relevant licences and documentation and cooperate with the Contracting Authority so that the asset can continue the service. To mitigate the risk of the assets not being returned in the expected condition, the contract should include a mechanism for surveying conditions in advance of expiry and requiring relevant remediation. In relation to a waste to energy project, this typically includes ground surveys to assess any environmental contamination beyond baseline contamination when the Private Partner assumed control of the relevant site. Typically the contract will provide for a retention fund to be established to fund remediation a certain period in advance of contract expiry, or for the Private Partner to provide some form of financial bond. Any funds remaining in existing lifecycle funds should be used/shared appropriately. Following completion of surveys and remediation to the agreed standard under the PPP contract, the Private Partner will typically require a "clean break" from further environmental liabilities through an environmental indemnity from the Contracting Authority. This is particularly important in the context of landfill remediation. For a more detailed analysis of typical handback provisions and sample drafting, see the World Bank's *Guidance on PPP Contractual Provisions 2019 Edition.*	In civil law jurisdictions, assets built on publicly owned land and/or used for a public service will often be subject to particular restrictions. For example, mandatory handback at termination may be embedded in underpinning administrative law principles or legislation and there may be mandatory access or rights of use for third parties. In some countries (such as France), ownership will sit with the Contracting Authority throughout the duration of the contract, with assets built on such land automatically becoming Contracting Authority property as soon as they are built and handed back for free at natural expiry. The PPP contract will set out the specific accompanying detail about asset condition and cooperation obligations, taking into account the underlying mandatory law provisions. Typically, in a common law jurisdiction, the Private Partner will have been leased the PPP project land by the Contracting Authority (and may have been permitted to sub-lease it to the relevant sub-contractors). The headlease to the Private Partner is usually coterminous with the PPP contract, so the land will revert to the Contracting Authority at the same time as the PPP project asset. In civil law jurisdictions, the PPP project land may have been made available through an administrative contract such as a "land concession" or other precarious right of use and is land within the public domain.

Important Information

Disclaimer

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