2016 EDITION

# Allocating Risks in Public-Private Partnership Contracts

Global Infrastructure Hub

The Global Infrastructure Hub Ltd (GI Hub), has a G20 mandate to grow the global pipeline of quality, bankable infrastructure projects.

By facilitating knowledge sharing, highlighting reform opportunities and connecting the public and private sectors, our ambitious goal is to increase the flow and quality of private and public infrastructure investment opportunities in G20 and non-G20 countries.

The GI Hub has been established in Sydney, NSW, Australia, as an independent not-for-profit company under Australian law.

**Hardcopy ISBN**: 978-0-9946284-1-1

**Online ISBN**: 978-0-9946284-0-4

**Ownership of intellectual property rights in this publication**



**Disclaimer**



The risk matrices presented in this publication are sample documents, for reference purposes only, and they should not be used as "models". Legal and technical advice should be sought to develop an appropriate risk matrix for any given project, designed to fit the circumstances of that project.

**Creative Commons Licence**

# Contents

# Overview

# Overview

The Global Infrastructure Hub (*GI Hub*), based in Sydney, Australia, is an organisation established by the G20 group of nations to foster innovative approaches to global infrastructure development. One of the GI Hub's key mandates is to promote 'leading practices' for quality infrastructure investments, including the preparation and dissemination of guidance materials in respect of project identification, preparation and procurement.

As part of its 'leading practices' mandate, the GI Hub is developing a set of annotated risk allocation matrices for public-private partnership (*PPP*) transactions, in a variety of sectors. 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 PPP agreement. The appropriate application of risk allocation principles is what determines whether a given PPP project will be 'bankable' (i.e. financeable), and whether it will be long-lasting (i.e. able to remain viable though to the end of a long-term contract).

The GI Hub has engaged Norton Rose Fulbright, a global law firm, to prepare a report on Allocating Risks in Public-Private Partnership (PPP) Contracts, 2016 Edition (the *Report*), with matrices showing the allocation of risks as between the public and private sectors in typical PPP transactions, along with related information on mitigative measures and typical Government support arrangements. Separate matrices are developed for 12 designated types of projects within the transport, energy and water and sanitation sectors. The 12 projects are:

## Transport sector:

1. a new toll road project, developed as a Design, Build, Finance and Operate (*DBFO*) transaction
2. a new airport project, developed as a DBFO transaction
3. a new municipal light rail project, developed as a DBFO transaction
4. an intercity railway project involving an existing railway, developed as a Rehabilitate-Operate-Transfer (*ROT*) transaction
5. a container terminal port project, developed as a DBFO transaction

## Energy sector:

6. a new photovoltaic power generation project, developed as a Build-Own-Operate (*BOO*) transaction, where the power is being sold to a state-owned single buyer
7. a new large-scale (greater than 100 MW) hydroelectric power project, developed as a Build-Own-Operate-Transfer (*BOOT*) transaction, where the power is being sold to a state-owned single buyer
8. new power transmission project, developed as a BOOT transaction
9. a natural gas distribution project involving an existing distribution for an existing utility, developed as a ROT transaction, in a situation where the wholesale supplier of natural gas is a state-owned entity and where natural gas tariffs are set by a regulator

## Water and sanitation sector:

10. a new water desalination project, developed as a BOOT transaction, where the desalinated water is being sold to a state-owned single buyer
11. a water distribution project involving an existing distribution for an existing utility, developed as a ROT transaction, in a situation where the wholesale

supplier of water is a state-owned entity and where water tariffs are set under the terms of the Concession Agreement

12. a solid waste collection, disposal, landfill and recycling project, developed as a BOT transaction

Each matrix is accompanied by annotations, explaining the rationale for the allocations, mitigative measures, any Government support arrangements, and describing alternative measures for countries with differing levels of PPP market maturity.

The Report has been prepared based on the collective global experience of over 20 senior lawyers from Norton Rose Fulbright. These lawyers have extensive experience advising project grantors and regulators, sponsors, proponents and contractors in established and emerging markets on a wide range of projects and they have a deep understanding of the material risk allocation issues that make the difference between a project being bankable or not. Norton Rose Fulbright's practice encompasses PPP transactions in the most advanced economies of the world such as Australia, Germany, the US, Canada and UK, along with many of the emerging markets such as Colombia, Nigeria, Tanzania and Indonesia. However, the diversity of experience and regional differences make it inherently difficult to suggest 'one size fits all'. The annotations in the Report reflect positions reached in projects that have closed and the solution found in one project may not necessarily be right for another.

The Report reviews trends and displays a risk outline for each sector. The Report is also aligned with the ongoing work of the World Bank Group (*WBG*) on the WBG Recommended PPP Contractual Provisions initiative for 2016.

Two workshops were held, in Singapore in April 2016 and in Paris in May 2016, to garner feedback on draft versions of the Report. Feedback was also sought more broadly from those working in the industry. Suggestions made have been considered, and where appropriate, have been incorporated into the Report.

For current purposes the Report is being presented in a hard copy tabular/matrix format and it is acknowledged that this format creates an element of overlap and repetition in presentation. A more interactive, user-friendly version of the Report will be made available online in an interactive website to be hosted by the GI Hub. Electronic database functionality is considered important because this will allow the reader to investigate the data; to find and filter relevant project and market profiles and then export this information as required.

We trust that you will find the Report useful.

**Nick Merritt**
**Global Head of Infrastructure, Mining and Commodities**
**Norton Rose Fulbright**

**Simon Currie**
**Global Head of Energy**
**Norton Rose Fulbright**

**Mark Moseley**
**Senior Director, Legal Frameworks and Procurement Policies**
**Global Infrastructure Hub**

# Scope and Terminology

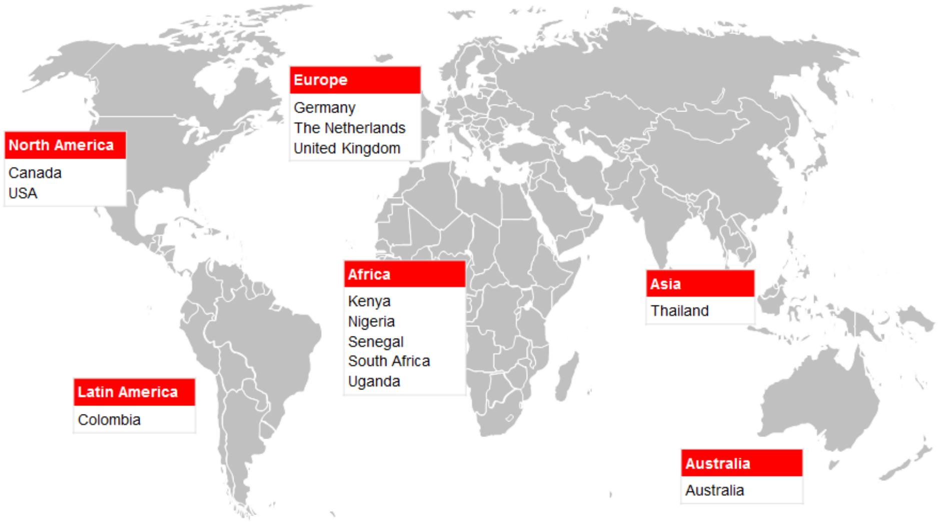
## Scope and objective of the Report

The selection of the sectors and projects is reflective of the outlook of the GI Hub. That is, the focus of the Report has been based on economic infrastructure, as opposed to social infrastructure, such as education and health related projects.

The risks identified in Report focus on the risks that can be legislated, allocated and mitigated between the public and private sectors and are risks addressed primarily through the concession or project agreement. Therefore risks such as Government procurement risk, private sector financial and performance risk, third party intervention/delay and specific risks arising in unsolicited projects, are outside the scope of this Report.

The objective of this Report is to provide additional guidance to countries, including both members and non-members of the G20, that wish to develop a programme of PPP transactions. The primary focus is on those countries with limited or no prior experience of PPPs, and the desired outcome of the Report is that those countries will have a useful reference guide to assist with their understanding of typical PPP risk allocation arrangements. It is hoped that this 'upstream' work will, in turn, assist in the development of a pipeline of robust PPP projects.

Please also refer to WBG Recommended PPP Contractual Provisions initiative for 2016 for further information on the contractual risks in PPP projects. A copy of the 2015 edition of the WBG Report on Recommended PPP Contractual Provisions can be found at http://ppp.worldbank.org/public-private-partnership/library/wbgreport-recommended-ppp-contractual-provisions.



## Common and civil law distinctions

Although the UK and certain other Commonwealth countries have been at the forefront of the legal and contractual development of PPP projects in the past 25 years, civil law countries (such as France) have long had a tradition of transferring to the private sector, in particular through the use of end users pay concessions (but also through public works and services procurement contracts), some of the risks associated with the construction or operation of public infrastructure such as rail, bridges, roads, water or power utilities. Whether based on user or Government pay models, to the extent that these arrangements seek to allocate risks between private and public parties they could be described as falling, more or less depending on the degree of cooperation between the parties, under the very generic term of 'PPP' contracts.

Where such civil law PPP contracts differ from common law contracts is that they generally are governed by administrative law which, besides giving jurisdiction to specific administrative courts, include a number of fundamental principles which protect the public interest and which the parties cannot always easily contract out of. These principles may include, for instance, the right of the public party to unilaterally cancel or amend the contract in the public interest, (the private party being entitled to compensation), or the right of the private party to obtain compensation if there is an unexpected and exceptional increase in the costs of performing the contract due to unforeseen economic circumstances.

Notwithstanding such differences since many of the technical, commercial and financial risks that PPPs seek to address tend to be similar worldwide, many civil law countries have sought to benefit from the more recent experience gained by the UK and other common law jurisdictions when developing, negotiating and implementing complex PPP risk allocation structures. This trend has been facilitated by the various sponsors, construction companies, lenders and professional advisers that were involved in the earlier projects and have since sought to apply similar matrices and practices to civil law projects.

As a consequence some civil law countries have had to pass specific laws to permit the introduction of contractual arrangements developed in the UK (and other markets) as they did not fit existing administrative law structures.

At a more practical level (i) the introduction of UK and common law inspired PPP practices, (ii) the use of common law precedents as a starting point for the drafting of PPP contracts in civil law countries and (iii) the larger number of international participants who feel more comfortable with detailed provisions rather than general clauses requiring further analysis of underlying local laws have resulted in longer and more detailed contracts than would be traditionally the case in civil countries.

It seems that the same trend has occurred in terms of risk allocation: whilst some jurisdictions' mandatory laws might interfere with the risk allocation (e.g. a provision excluding compensation for a private party expropriated for its own default may entitle such party to an unjust enrichment claim), on the whole there is no significant difference in the allocation of risk between civil and common law jurisdictions.

Accordingly it seems that the differences between common law and civil law do not play a significant role when it comes to general risk allocation. In this context, an individual country's background and political objectives are probably more important.

So whilst each individual country will have its own way of documenting general risk allocation, the risk matrices in the Report even those based on projects developed in common law countries will be of useful application when considering a similar PPP in a civil law jurisdiction.

## 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. |
| Build-Own-Operate / BOO | The project structure whereby the Private Partner builds the asset in question, has full ownership of the asset and maintains the responsibility of operating the asset. |
| Build-Own-Operate-Transfer / BOOT | The project structure whereby the Private Partner builds the asset in question, has full ownership of the asset, maintains the responsibility of operating the asset and then transfers the asset back to the Contracting Authority after a specified period of time (typically somewhere between 25 and 30 years in the transport sector and 15 and 25 years for energy and waste/water). The Contracting Authority should carefully consider the quality of the asset it expects to receive back at the end of the term and how to ensure that the Private Partner ensures that the asset achieves that standard. |
| Build-Operate-Transfer / BOT | The project structure whereby the Private Partner builds the asset in question, maintains the responsibility of operating the asset and then transfers the asset back to the Contracting Authority after a specified period of time (typically somewhere between 25 and 30 years in the transport sector and 15 and 25 years for energy and waste/water). The Contracting Authority should carefully consider the quality of the asset it expects to receive back at the end of the term and how to ensure that the Private Partner ensures that the asset achieves that standard. |
| 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”). |
| Changes in law | The amendment or passing of new laws, as well as new interpretations of laws, that conflict with the laws affecting the project and impact upon the project; change in law protection may be subject to a specified level of materiality before any protection is given (e.g. demonstrating the change has a minimum financial impact on the Private Partner). |
| Commercial lenders | The parties, typically international banks but may also include local banks, who provide financial backing to the project, taking an interest by way of security – often of the asset in question or the project as a whole. |
| Commercial operate date / commercial operations / COD / Scheduled COD | The date on which the construction phase of the project is successfully completed (typically determined by some form of independent certification and/or testing regime); the scheduled COD represents a target date for such successful completion with failures to achieve that date having commercial consequences (typically delay liquidated damages and/or termination). |

| | |
|---|---|
| Community engagement | Steps taken to ensure that the project in question can adequately function in the local community. This may be by developing the land in a way that is as compliant as possible with local customs, employing a certain amount of local citizens or engaging with local businesses. |
| 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. |
| Concession agreement / power purchase agreement (PPA) | The agreement outlining the terms on which the project will be undertaken (e.g. BOO, BOOT, BOT). In the energy sector, this is typically the PPA. |
| 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 concession agreement or the commencement of construction by reference to certain works) until the commercial operations 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 concession agreement. |
| CPI | The consumer price index or similar metric |
| De minimis | A minimum threshold often used in concession agreements to benchmark when something is of a material nature, thereby triggering a consequence under the agreement. |
| Deductions | A method, set out in the payment mechanism by which payments to the Private Partner are reduced if it fails to meet the key performance indicators. Sometimes called Abatements. |
| Default termination | Where an innocent party exercises its contractual right to terminate the concession agreement in whole or in part due to the other party's actual or anticipatory failure to perform its contractual obligations. |
| Demand risk projects | Projects which rely on demand forecasting (e.g. road and rail use) to determine the bankability of the project. |
| Design-Build-Finance-Operate / DBFO | The project structure whereby the Private Partner designs and then builds the project asset in question. It then finances and retains the responsibility to operate the project. |
| Developed market | A market that frequently witnesses large-scale industrial projects with a stable economy and legislative system capable of governing and enforcing the concession agreement in a fair and predictable manner. |

| | |
|---|---|
| Direct agreement / tripartite agreement | An agreement between the Contracting Authority, Private Partner and the lenders under which the Contracting Authority agrees to give the lenders contractual remedies in the event of the Private Partner defaulting under its contractual obligations before the Contracting Authority can terminate the concession agreement. |
| Emerging market | A market in which few large-scale industrial projects have been commenced, often with a legal structure that can lead to a degree of unpredictability, for example, uncertainty in the need for particular licences. |
| EPC contract | A form of contracting arrangement where the contractor is made responsible for all the activities from, procurement, construction, to commissioning and handover of the project to the principal/owner. Often, referred to as a lump-sum turnkey contract. |
| 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 is sourced from the existing finances of a company (for example, raised through the issuing of shares in the company), rather than though external debt (for example, from commercial lenders). |
| Equity return | The amount of a company's net income returned as a percentage of the shareholders' equity. |
| Expropriation | Where the Government takes privately owned property and declares it for public use. |
| Finance Documents | The key finance documentation which typically includes a facility agreement with one or more commercial lenders, an intercreditor agreement between the commercial lenders, equity investors and Private Partner, direct agreement(s) and security documents. |
| Float period | The amount of time that one stage of the project can be delayed without causing delay to any subsequent stages of the project. |
| Force majeure | An event, outside the control of the contracting parties, that results in one or both of the parties being unable to fulfil their contractual obligations. In common law jurisdictions the definition of force majeure is typically a matter of drafting and negotiation whilst in civil law jurisdictions is normally set out in the relevant civil or commercial code. |
| Foreseeable /unforeseeable | Circumstances in the reasonable contemplation of the parties given their knowledge at the time of entering into the concession agreement. Unforeseeable having the opposite meaning. |
| Functional specification | The document outlining the required specification of as-built project and how the project is to operate in practice. |

| | |
|---|---|
| IFC Safeguards | All projects undergoing the International Finance Corporation's (IFC) initial credit review process after 1 January 2012 must follow:<br>• The Policy on Environmental and Social Sustainability, which defines IFC's commitments to environmental and social sustainability;<br>• The Performance Standards, which define clients' responsibilities for managing their environmental and social risks; and<br>• The Access to Information Policy, which articulates IFC's commitment to transparency.<br>These can be found at http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ifcsustainabilityframework_2012. |
| Indigenous land rights | The legal or beneficial interests in the land on which the project will be built that belongs to local citizens or affects their customs in a material way. |
| Investors | Parties who provide capital to the project enabling it to commence, seeking to make gains on the monies provided in the form of interest payments or a proportion of profits from the project (i.e. equity return). |
| Government support | Where the Government in the jurisdiction in which the project is based actively uses its powers to enable the project to function, or acts in a passive manner whereby it does not prevent the project from commencing. Such support may extend to guarantees if the Contracting Authority is perceived by the Private Partner to be a credit risk and/or 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. |
| Hair trigger | Circumstances that easily and disproportionately allow a party to terminate all or part of contract with no genuine prospect of the offending party remedying the issue. |
| Hedging arrangements | An instrument used to limits 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. |
| Hedging termination costs | The costs associated with terminating any hedging arrangements prior to their expiry. |

| | |
|---|---|
| Liquidated damages / LDs | 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 because they are deemed a penalty. |
| Longstop date | A date which is tied to a prescribed time period after a scheduled completion date by when all obligations must have been fulfilled otherwise a right of termination will typically arise. |
| MSA | Manufacture and supply agreement. |
| Natural force majeure | A force majeure event that is brought about by an act of nature, for example, an earthquake. |
| Non-default termination | The situation in which the contract can be terminated by an event that is not brought about by either party breaching their contractual duties (e.g. termination for extended force majeure or termination by agreement). |
| Novate / novation | Replacing one of the parties to an agreement with another party who consequently takes on the rights and obligations of the party who is no longer bound by the contract (in contrast to an assignment whereby, typically, only rights can be transferred). |
| O&M | Operation and maintenance – where a party is responsible for the continual functioning of the project after the commercial operations date. |
| Operations phase | The functional stage of the project after the construction phase when it adequately operates, finishing with the end date of the concession agreement. |
| Output specification | The document outlining the levels of capacity from the project from a technical and financial perspective that are required in order to ensure the projected is built to the desire standard and is profitable. It is critical that Contracting Authority gets this document right as it is the functional demand of the project that the Private Partner will build and perform to. |
| Payment mechanism | The formulae used to assess performance of the project and to calculate the payments to be made to the Private Partner assessed against their compliance with the performance indicators. |
| Performance indicators / KPIs | Benchmarks to measure performance and of the project, or the parties' contribution to the project. These are typically referenced to the output specification and are the benchmark against which the Private Partner is incentivised to perform. If the Private Partner falls short of the performance indicators then typically deductions will be made and in persistent or material circumstances a right of termination may arise. It is imperative that the Contracting Authority runs a sensitivity analysis in the payment mechanism to |

| | |
|---|---|
| | calibrate the deductions. |
| Performance specification | The document outlining the way in which the project must be operated throughout the life of the concession agreement and typically includes KPIs. |
| Political force majeure | A force majeure event that is brought about by the direct acts of the Government, such as a nationwide strike protesting the Government's actions, or by indirect events affecting the Government, such as war. Similar terminology used may include "material adverse Government action / events of Government action / inaction / buyer risk events (which may also extend to Contracting Authority breach). |
| Private Partner | The entity from the private sector that undertakes the project typically through the use of a special purpose vehicle incorporated specifically and only for the purposes of undertaking the project. |
| Project developer | The entity employed by the Private Partner or subsidiary to build the project. |
| Rehabilitate-Operate-Transfer / ROT | The project structure whereby the Private Partner receives from the Contracting Authority an existing asset, may then upgrade, improve or rehabilitate that asset and then operate and maintain the asset to the agreed standard and subsequently transfers it back to the Contracting Authority after a specified period of time (typically somewhere between 25 and 30 years in the transport sector and 15 and 25 years for energy and waste/water). The Contracting Authority should carefully consider the quality of the asset it expects to receive back at the end of the term and how to ensure that the Private Partner ensures that the asset achieves that standard. |
| Senior debt | Money that is borrowed by the Private Partner to finance a project that takes priority over any 'junior' debt (lower down the order of priority) or equity in the event that the project company becomes insolvent. |
| Set-off | If one of the contracting parties is owed monies by another contracting party, the debtor's right of set-off allows it to balance mutual debts with the creditor. |
| Sponsor | The party that is the ultimate owner of the Private Partner. It invariably includes the major project parties such as construction contractor and commonly includes financial investors or funds. Sponsors will limit their liability to the project through the Private Partner but may need to give limited support or guarantees to the lenders of the senior debt, particularly during the construction phase. |
| Stabilisation | Contractual clauses that entrench certain legal provisions, enabling foreign investors to protect themselves from changes in the law |

| | |
|---|---|
| | and a certain degree of political risk. |
| Substitute concessionaire | The party who fulfils the obligations of the Private Partner in the event that the concession agreement is novated. |
| Tariff | The rate at which prices for the project output – for example, electricity in the context of a project in the energy sector - are paid between the Contracting Authority and Private Partner, in relation to either a predetermined price or agreed formula. |
| Termination costs | The fee charged to a party to the contract when it wants to break the contract. |
| Termination trigger | An event that allows for an innocent party to terminate a contract in the event that the other party to the contract breaches its obligations. |
| Uninsurable | When a project, or part of a project, cannot be covered by any insurance policy or insurance cover cannot be obtained on the specified terms, or when it is not commercially feasible to obtain an insurance policy for the project or insurance cover on specified terms. |

# Transport Sector

# Transport Sector

## Risk Matrix 1: Toll road (DBFO)

- New toll road project, developed as a DBFO transaction
- Assumes that the Contracting Authority identifies the right-of-way
- Project may be structured either as availability payment or revenue risk
- Design, build, operate, maintain and transfer of a new road
- Tolling may form part of the scope, may be separately tendered or may be retained by the Contracting Authority
- Scope may include emergency accident and preventative responsibilities
- Project scope may need to include obligations to interface with future changes in tolling technologies (such as real time tolling) and other future extensions or new interconnected roads
- Key risks
  - Land purchase and site risk
  - Demand risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution, hazardous materials.<br>Latent defects.<br>Easements, encroachments setback, etc. | Developed | | | X | The Contracting Authority bears the principal risk as it is best positioned to select and acquire the required land interests for the project.<br>However, there may be some areas where risk will be shared with the Private Partner. While the Contracting Authority may be able to secure the availability of the corridor, the suitability of the corridor may be dependent on the Private Partner's design and construction plan.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, as well as resolving issues with existing utilities and contamination.<br>The Contracting Authority will normally hand over the site to the Private Partner in an "as-is" condition. The Private Partner may take the risk for dealing with adverse conditions revealed by surveys regarding unforeseeable subsoil risks.<br>Where it is not possible to fully survey prior to award (eg in high density urban areas) risk will be allocated to Contracting Authority or shared.<br>The risk of artefacts may be shared where the Private Partner may bear the risk in respect of designated areas, and the Contracting Authority may bear the risks of findings outside such areas. | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process. Such assessment should consider any easements and covenants, etc. that may encumber the land.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and those that will affect the construction and operation of the toll road.<br>The Contracting Authority should also manage any indigenous land rights issues that may preclude the use of the site.<br>Prior to awarding the contract, the Contracting Authority could (through legislation and a proper consultation process) limit the ability of land owners or adjacent properties and trades to raise claims on the land.<br>The Contracting Authority should complete the process of land acquisition before the contract is awarded. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even in the case of a legally clear site, the Contracting Authority may need to invoke Government enforcement powers to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner is not best positioned to resolve.<br>Examples include the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site including a compensation regime for affected properties adjacent to the road.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets. For example, the requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada.<br>On the other hand the rights of private landowners against forced sales or expropriation might be stronger in developed markets, requiring more time to acquire the land. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security. | Emerging | | | X | The Contracting Authority bears the principal risk as it is best positioned to select and acquire the required land interests for the project.<br>However, there may be some areas where risk will be shared with the Private Partner. While the Contracting Authority may be able to secure the availability of the corridor, the suitability of the corridor may be dependent on the Private | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process. Such assessment should consider any easements and covenants, etc. that may encumber the land.<br>The Contracting Authority | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even in the case of a legally clear site, the Contracting Authority may need to invoke Government enforcement | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | Heritage.<br>Archaeological.<br>Pollution, hazardous materials.<br>Latent defects.<br>Easements, encroachments setback, etc. | | | | | Partner's design and construction plan.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, as well as resolving issues with existing utilities and contamination. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take the risk relating to known adverse conditions but other unforeseeable ground risks (e.g. archaeological risks, unknown hazardous materials) will likely be borne by the Contracting Authority.<br>The Contracting Authority should also consider the impact that the project will have on adjacent properties and industries and may need to retain the risk of unavoidable interference with such parties. | should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and those that will affect the construction and operation of the toll road.<br>The Contracting Authority should also manage any indigenous land rights issues that may preclude the use of the site.<br>Prior to awarding the contract, the Contracting Authority could (through legislation and a proper consultation process) limit the ability of land owners or adjacent properties and trades to raise claims on the land. | powers to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner is not best positioned to resolve.<br>Examples include the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. See comments on "Environmental and Social Risk" for a toll road project in emerging markets. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Developed | | | X | The Private Partner will have primary responsibility to accept the project site in an "as is" condition, subject to Contracting Authority's disclosure of relevant matters, and manage the environmental and social strategy across the project, as well as obtaining all required licenses, permits and authorizations as necessary. This also comprises to a certain extent the risk of unknown environmental conditions to the extent an experienced contractor would have considered their existence as being possible.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the Contracting Authority.<br>In some projects the Private Partner is obliged to perform surveys of the ground conditions. Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority. | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner. The Private Partner will have to duly examine the documents provided by the Contracting Authority in order to be aware of potential risks.<br>Depending on the specific risk allocation in the individual project the Private Partner might be further obliged to undertake additional surveys.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan addressing these aspects, including the execution of any necessary contractual arrangements. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Emerging | | | X | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately addressed or priced may need to be retained by the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | Government will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan addressing these aspects, including the execution of any necessary contractual arrangements.<br>Active stakeholder management by the Contracting Authority will be critical to achieving key milestones. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the toll road and its compliance with the output / performance specification.<br>The Contracting Authority may provide to the bidders a basic design, but bidders will be responsible for any errors, if they assume this design for their detailed design.<br>However, in some road projects, as in Germany for example, there is 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 not taken place yet.<br>If the project is being integrated into existing infrastructure, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted (in that it will not be able to warrant defects in the existing infrastructure that may impact performance). | The Contracting Authority will often broadly draft the Private Partner's design and construction obligations to satisfy the performance specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the design.<br>A design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner, however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The Contracting Authority usually provides for a basic design, but bidders will be responsible for any errors, if they adopt this design for their detailed design. | Developed market toll road projects benefit from stable resource availability and defined design standards which allow for increased innovation and productivity gains. The quality of the information provided by the Contracting Authority and limited ability to verify such data can also hinder the Private Partner's ability to unconditionally take full design risk. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the performance specification.<br>If the performance specification is too prescriptive (e.g. the required route corridor constrains 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.<br>Prescriptiveness of performance specification dependant on depth of feasibility study.<br>Delay in approving designs Contracting Authority risk.<br>Changes to design depend on reason for change – original design deficient Private Partner risk or change required by Contracting Authority may be a Contracting Authority risk. | The Contracting Authority may wish to limit how prescriptive it should be in the performance specification. It may wish to request be 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 take into account when finalizing the performance specification.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The Contracting Authority usually provides for a basic design, but bidders will be responsible for any errors, if they adopt this design for their detailed design. | Emerging market toll road projects may be particularly dependent on availability of reliable resources necessary for construction and operation, which have implications for the Private Partner's ability to meet the reliability requirements in the performance specification. |
| Construction risk | Labour dispute. Interface/ project management.<br>Commissioning damage.<br>Intellectual property breach / infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>The Contracting Authority may request a performance and warranty bond from the Private Partner.<br>Private Partner assumes labour dispute risk unless primarily political risk, however relief may be available for strikes and other widespread events of labour unrest.<br>Private Partner takes risk of intellectual property infringement.<br>Private Partner required to design and construct the project in accordance with good industry practice, and is responsible | The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors.<br>Additionally, standards or codes revised after the tender date may be deemed relief events if compliance with such revisions increase the cost and or time to perform the work.<br>In cases of cost overruns, contractual provisions may provide for additional equity or additional financing. | If standards change after the tender, the Contracting Authority may consider increasing the payments to account for increased costs of compliance or Private Partner will be excused from compliance with the new standard. | Associated risks that can affect construction costs, such as inflation, should also be considered. The Private Partner will generally price in this risk in economies where such risk can be projected and quantified.<br>Turnkey construction contracts and guaranteed completion dates, costs, and performance standards are often negotiated during project development.<br>In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | for completing the project free of defects and latent defects.<br>Private Partner assumes risk of cost overrun where no compensation/relief event applies.<br>Private Partner takes risk of cost overrun where no compensation/relief event applies. | | | | and by appropriate timetable and budget contingency. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>Intellectual property breach breach/infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>Private Partner assumes labour dispute risk, however relief may be available for strikes and other widespread events of labour unrest.<br>Private Partner takes risk of intellectual property infringement.<br>Private Partner required to construct the project in accordance with good industry practice, and is responsible for completing the project free of defects and latent defects.<br>Private Partner assumes risk of cost overrun where no compensation/relief event applies.<br>Private Partner takes risk of cost overrun where no compensation/relief event applies. | The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractor.<br>The Private Partner will often agree on a lump sum price with subcontractors in order to exclude the risk of cost overruns.<br>The Private Partner will then retain the risk that liability caps agreed under the subcontract are reached or that the warranty period under such subcontract is shorter than its defect rectification obligations towards the Contracting Authority.<br>Additionally, standards or codes revised after the tender date may be deemed relief events if compliance with such revisions increase the cost and or time to perform the work. | It is elemental in PPP projects that the Private Partner is responsible for construction risks and that the responsibility for defects does not expiry prior to the expiry of the contract.<br>However, if standards change after the tender, the Contracting Authority may consider increasing the payments to account for increased costs of compliance or Private Partner will be excused from compliance with the new standard. | Associated risks that can affect construction costs, such as inflation, should also be considered. In emerging markets such risk determination may be difficult, especially considering the foreign supply contracts that may be necessary for the project. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction, holding costs of other contractors and extended site costs.<br>The Private Partner is best placed to integrate complex civil works, bridge works, tunnelling (if relevant) and, if within scope, tolling equipment design and | Depending on road length, the Contracting Authority may wish to implement a multi-staged completion process to ensure the Private Partner begins receiving payment for its design and construction services once significant components of the project are substantially completed. This can help increase cash flow during construction, reduce the Private Partner's financing costs and incentivize the phasing of | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development does not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay | In developed markets, enforcement of construction deadlines and budgets may be easier as the Private Partner will typically have more experience and reliable access to resources. However, where the projects involve large elements of tunnelling, construction risk will be more carefully assessed by the Private Partner. In some projects this may lead to tunnelling |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | installation. | construction works in order to ensure critical components are completed on time. Financial penalties and liquidated damages can help enforce construction deadlines. However, a single completion regime is more common.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>The Contracting Authority may also consider the inclusion of a look forward test to trigger a default if an independent party certifies that completion will not be achieved by the longstop date. However, the concept of a "longstop date" as a specific reason for early termination has not been common in European toll road projects.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. However, in many cases the Contracting Authority has not been willing to accept this risk | components being separately procured on a non-PPP basis. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs. | It may be difficult for the Private Partner to mitigate integration risks associated with a multi-staged completion process solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect such | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not | Some emerging market toll road projects 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 an emerging market context |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| **Category** | **Description** | **Variable** | **Public** | **Private** | **Shared** | **Rationale** | **Measures** | **Issues** | **Market Comparison Summary** |
| | | | | | | The Private Partner is best placed to integrate complex works, bridge works, tunnelling (if relevant) and, if within scope, tolling equipment design and installation. | risks. Ensuring that the programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | the dynamics may be different if the lenders have a significant underwrite of their senior debt.<br>The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed concession period for operation, or (ii) the scheduled construction period forming part of the fixed concession period (with extensions for certain events such as force majeure). With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose delay liquidated damages on the Private Partner. However this decision should always be assessed against the likelihood that genuine out-of-pocket costs will actually be incurred for such delay, so as to avoid unnecessary contingency being built into the project (which then increases the 'price'). |
| Performance/ price risk | The risk that the asset is able to achieve the performance specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements.<br>Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | X | | The Private Partner bears the risk of meeting the performance specification.<br>However, the Contracting Authority is responsible for enforcing the regime and for ensuring that the performance specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels, and the appropriateness of metrics given the nature of the project.<br>In an availability based payment structure the Private Partner may be subject to abatement if performance based standards are not met. These standards | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based on availability, and quality of operation and maintenance service can be measured against pre-determined schedules or standards and secured by respective penalties and deductions.<br>Risk profiles recognize the decreased need for mitigation as the project matures, but early stage mitigation measures are | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | may be linked to traffic flow KPIs or accident response measures (for example). | necessary in order to stabilize early losses.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | | |
| Performance/ price risk | The risk that the asset is able to achieve the performance specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements.<br>Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Emerging | | X | | The Private Partner bears the risk of meeting the performance specification.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the performance specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | The Private Partner may require the Contracting Authority to reduce the performance requirements during the settling in period and possibly readjust the performance metrics once the performance of the toll road has stabilized. This would mitigate the risk of long-term performance failure.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | For emerging 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.<br>There is sometimes a risk that Contracting Authorities take a 'best in class' approach and set standards for higher than may be achievable especially if driving and vehicle maintenance standards fall below the aspirational standards. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The  Private Partner bears the principal responsibility to ensure an uninterrupted supply of resources for the project and to manage the costs of those resources<br>In respect of toll roads this is especially relevant regarding special, but regular weather conditions, such as winter road clearance, or monsoon flooding. | The Contracting Authority will be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary. For example, the Contracting Authority may request a winter clearance concept before start of operation in order to ensure that the Private Partner provides for sufficient resources. | Monthly payments to the Private Partner may include a general cost indexation cover in order to partially cover cost increases that would otherwise be borne by the Private Partner. | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern, however energy costs may still vary significantly over the course of project that must be accounted for. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of resources for the project and to manage the costs of those resources.<br>There may be specific instances where the Private Partner may need to the share this risk with the Contracting Authority, such as availability of energy supply, or reliance on local source materials where these may be affected by labour disputes, | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of toll adjustments.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner's financing for these costs. | Emerging markets are generally more susceptible to market volatility and major cost variations. See comment on exchange rate for a toll road project in emerging markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | embargos or other political risks.<br>Time and cost risks are normally passed on to contractors. | Lenders may look to sponsors for completion support. | | |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Developed | | | X | The earlier projects placed demand risk on the Private Partner but in many developed markets (Europe and Australia) traffic forecasts fell short of expectation and there were a few insolvencies. Over recent years it has become more common for the default position for toll road projects in developed markets to provide for the Contracting Authority to retain demand and toll revenue risk (risk of traffic numbers and total revenue receipt).<br>Demand risk is unlikely to be accepted by the private sector in the absence of extensive traffic analysis and a regime that protects the Private Partner from “material adverse changes” such as new competing transport options or changes to surrounding traffic and road conditions. | If it is absorbing demand risk, the Contracting Authority should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts.<br>Where a demand based project has a MAC regime, the parameters of the Private Partners’ protection will need to be carefully negotiated to ensure the Contracting Authority and other relevant Government bodies retain sufficient flexibility to implement other necessary urban development over the term of the project. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable traffic and revenue forecasts, such that the Contracting Authority is well placed to manage demand risk.<br>A number of developed markets tender gas stations and service stations separately and this removes additional potential revenue streams from the Private Partner who would become solely reliant on traffic volume. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Emerging | | | X | The default position for toll road projects in emerging markets has been for the Private Partner to retain demand and toll revenue risk (risk of traffic numbers and total revenue receipt). There are examples of some jurisdictions in Africa where there has been a push back on this.<br>To the extent that toll revenue may be insufficient to cover the cost of financing and operating the project in question, as well as meeting the likely project contingencies, then some form of taxation-based support within the payment structure will be required, and the Contracting Authority may need to retain an element of demand risk. (e.g. by the implementation of upper and lower limits of revenues or a minimum guarantee). | Both the Contracting Authority and Private Partner should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | There may need to be an element of subsidy from the Contracting Authority if demand falls below a certain amount. If this is structured as a “cap and collar” arrangement then the Contracting Authority should also start to benefit from economic upsides above the Private Partner’s base case.<br>Some projects now ask bidders to price their subsidy needs, developing a hybrid demand risk/availability model.<br>If there is high uncertainty over traffic projections and uncertainty over | It may be difficult for Contracting Authorities in emerging markets, particularly in the case of market first projects, where there is likely to be a lack of relevant comparative market data to begin with.<br>In some emerging markets the lack of any other viable traffic solutions on a particular corridor may also give the Private Partner greater confidence to accept demand risk which may further explain the difference in approach between developed and emerging markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | | revenues (due to tariff limitations and/or currency volatility) then the project may need to be structure purely on the basis of an availability fee. | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br><br>Increased maintenance costs due to increased volumes.<br><br>Incorrect estimates and cost overruns. | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set forth in the performance specifications defined by the Contracting Authority.<br><br>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 project model instances, work stemming from implementing technological or structural changes.<br><br>Note that in demand-risk projects, the Private Partner takes the primary risk that the toll road will be maintained to a sufficient level of quality and reliability to ensure that it can continue to attract business. However where the toll road constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate key performance indicators to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced toll revenue entitlements).<br><br>As regards existing structures, such as bridges, the maintenance risk should be allocated to the Private Partner to the extent the conditions of the bridges are known and future maintenance work can be assessed properly by an experienced contractor. | The Contracting Authority should take time to ensure that the documentation for existing bridges is up to date and a reliable basis for the calculation of the bidders.<br><br>In the event that the allowed load weight of the trucks is changed, the road may be subject to increased abrasion. This risk should sit with the Contracting Authority.<br><br>The primary role of the Contracting Authority is to properly define the performance specifications and level of services required of the Private Partner.<br><br>Adequate performance by the Private Partner can be enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to self-rectification of deficiencies.<br><br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services reduces the benefits of the DBFO project model. | In developed markets, the involvement of the Private Partner in the operation, maintenance and rehabilitation of the project provides several benefits by incentivizing greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards | Emerging | | X | | The Private Partner will have principal responsibility for maintaining the system to the appropriate standards set out in the | The Contracting Authority should ensure that the performance specification properly defines the | The Contracting Authority may be required to guarantee and proactively | Some projects in emerging markets have been procured on a design-build basis with a |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | | | | | performance specification defined by the Contracting Authority.<br>Note that in demand-risk projects, the Private Partner takes the primary risk that the toll road will be maintained to a sufficient level of quality and reliability to ensure that it can attract business. However where the toll road constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate key performance indicators to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced toll revenue entitlements).<br>Where there is integration of the toll road into existing infrastructure, the Contracting Authority may need to retain the maintenance or latent defect risk of some of the existing assets and fit for purpose standards appropriately adjusted. | maintenance obligations of the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement.<br>Failure to get the output specification right for the project will effectively transfer risk back to the Contracting Authority.<br>The primary role of the Contracting Authority is to properly define the performance specifications and level of services required of the Private Partner.<br>Further, the Contracting Authority may establish a facilities management committee to oversee the Private Partner's performance of the maintenance and rehabilitation services, along with a formal mechanism to discuss and resolve performance related issues.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | manage the maintenance of the existing roads that integrate with the project. | 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. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, an amount of compensation | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) discovery of any species-at-risk, fossils, or historic or archaeological artefacts that require the project to be abandoned or delayed.<br>In the event the asset is destroyed prior to hand over as a result of force majeure, the Private Partner is obliged to re-build the asset at its own costs, to the extent the risk is insurable.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded or to establish other methods in order to limit the Private Partner's risk in this regard.<br>During operation, the impact of the force majeure will depend on whether the project is availability based (where relief from key performance indicator penalties may be required) or is demand-based (where an element of toll subsidy may be required). | On an availability based project, the risk of disruption as a result of no-fault events could be mitigated by suspending the performance obligations respectively.<br>Alternatively the project may be subject to abatement but excused from non-performance/breach. | should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event.<br>Where the project is terminated, it will be a key area of focus for prospective lenders as part of their initial credit assessments as to whether the debt will be kept whole in such a scenario. From a lenders' perspective the termination payment made by the Contracting Authority in respect of the equity will serve as a buffer if the termination payment of the Contracting Authority does not cover 100% of the outstanding debt. | its expected rate of return) for termination arising from a "natural" force majeure. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (eg fire / flooding / storm, vandalism etc), and<br>- force majeure events which typically cannot be insured (eg strikes / protest, terror threats / hoaxes, emergency services etc.)<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. Design resilience is also an important mitigating factor for projects with seasonal weather such as monsoon.<br>On an availability based project, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner would take the risk of a certain number of day-to-day adverse events | See comments on the risk of uninsurability for a toll road project in emerging markets. | On emerging market transactions, the Contracting Authority often does not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | or level of cost has been exceeded.<br>During operation, the impact of the force majeure will depend on whether the project is availability based (where relief from key performance indicator penalties may be required) or is demand-based (where an element of fare subsidy may be required). | typical to a project of this nature but without incurring performance penalties). | | |
| Exchange and interest rate risk | The risk of currency and interest rate fluctuations over the life of a project. | Developed | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market.<br>The Contracting Authority may take the risk of a change in the reference interest rate between submission of bid and financial close. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks other than the risk of changes to the reference interest rate prior to financial close.<br>However in some circumstances the Contracting Authority may seek to retain interest rate risk if it feels it can bear the risk more efficiently than the private sector. | In developed markets, the risk of currency and interest rate fluctuations is not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency and interest rate fluctuations over the life of a project. | Emerging | | | X | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of toll adjustments. | As tolls will be collected in local currency the Contracting Authority may need to retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | In emerging market toll road projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors.<br>If an uninsured risk materializes | The Contracting Authority should consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | to obtain any relevant insurance.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | and the asset is destroyed, the Private Partner may need the Contracting Authority to act as insurer of last resort and make payments to the Private Partner. Alternatively the Contracting Authority may either be obliged to finance the repair of the asset or to terminate the contract. | circumstances.<br>The Contracting Authority might be reluctant to accept an obligation to repair the asset in order to maintain free choice of options. | significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority should consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. It might also be more difficult to get insurance for certain events under commercially viable conditions. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the license and access to the toll road and surrounding lands necessary to allow the Private Partner to fulfil its obligations. For example, under German law, the Private Partner will be secured by virtue of law against expropriation and discriminating | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. Alternatively, statutory law may provide for respective protection for the benefit of the Private Partner. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | legislation.<br>However, the Contracting Authority may be reluctant to accept relief and compensation for general changes in law, since this risk should be with the Private Partner. | | | |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control.<br>This concept may include any "material adverse Government action" (broadly speaking any act or omission of any Government entity which has a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession) and may also include a specific list of events of a political nature such as expropriation, interference, general strikes, discriminatory changes in law as well as more general uninsurable events such as risks of wars / riots / embargos etc.<br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | The Contracting Authority must ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity potentially with a Government guarantee of the Contracting Authority's payment obligations. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law falls mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) Specific (to the sector or to PPP projects in the jurisdiction) or (iii) general change in law affecting capital expenditures. Such protection can be provided by virtue of statutory law. However, the Private Partner has to take the risk of changes in law and technical standards leading to increased capex to the extent such change was foreseeable at the time of submission of bid.<br>A change in law is often subject to a de minimis threshold before the Private | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Change in law risk may also be mitigated where there is an ability to pass back changes in the tariff charged on the project.<br>Some projects only permit the Private Partner to claim relief for General Changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the | Past concession models (including that developed 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 SOPC model had already taken this approach. | In developed markets, the Private Partner will not be compensated for General Changes and likely will have less protection than in emerging countries where Contracting Authority will be expected to bear a significant portion of the change in law risk in order to attract private investment. Such risk may be heightened in jurisdictions where the PPP legislation allows for a local assembly to veto the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | Partner is entitled to compensation<br>The Private Partner may not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to relief where this is necessary to avoid an impossible obligation. The Contracting Authority often has to consent to such Variation if the Private Partner is obliged to comply with the change in law. | prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise. | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | X | | | The Contracting Authority typically bears principal responsibility for changes in law post-bid / post-contract signature.<br>There may be a degree of risk sharing with the Private Partner and there may be certain risks that the Private Partner is expected to bear alongside the remainder of the market.<br>The Private Partner would look to be made whole in respect of changes of law which are discriminatory (towards the project or the Private Partner), or specific (to the transport sector).<br>The Private Partner may also receive protection against other (general) changes in law, however the level of protection will reflect the Private Partner's ability to mitigate this risk (through the tariff or inflation regime, if applicable) and whether the risk is of general application to the market (e.g. an increased tax on corporate tax or dividends across the board). It may also be appropriate for the Private Partner to bear a certain financial level of risk before compensation becomes payable, to ensure that claims are only made for material changes in circumstances.<br>Changes in law should always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation, or otherwise should give rise to a right to terminate (typically on a Contracting Authority default basis). | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | 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 concession agreement.<br>However, the stabilization method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | | X | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority.<br>On availability-based projects, during the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index.<br>Demand risk projects also need the ability to increase the tolls, but this ability may often be restricted (as toll-raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | During the concession term, the Private Partner will look to be kept neutral in respect of both international and local inflationary costs through respective agreements with its subcontractors. | The payment mechanism may account for inflation costs by incorporating the consumer price index into the monthly payments. | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | | | X | Inflation risk is typically borne by the project user (on demand-risk projects) or the Contracting Authority (on availability-based projects).<br>On availability-based projects the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as staff and materials).<br>Demand risk projects also need the ability to increase the tolls, but this ability may often be restricted (as toll-raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | The Private Partner will look to be kept neutral in respect of both international and local inflationary costs through appropriate inflation uplift or tariff adjustment regime albeit there is always a time lag in how quickly the indexation price increase is available to the Private Partner. | The Contracting Authority may need to provide a subsidy to the Private Partner on demand risk projects if users cannot bear the cost increase. It will be more crucial than in developed markets to find appropriate indicators mirroring the project needs rather than a general CPI. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set | | In developed markets the Private Partners' 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, particularly in the equity investor markets and the added benefits of allowing |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | out proposals for governance of Private Partner. | | capital to be 'recycled' for future projects. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period plus ramp up phase of operation).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In emerging markets, there is typically more restriction on Private Partner's ability to restructure or change ownership, although very restrictive provisions may deter investment. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in the toll road sector. | Developed | X | | | The Contracting Authority may consider imposing obligations on the Private Partner to adopt and/or integrate with new tolling technologies or to allow for other foreseeable developments, such as driverless cars. | The Private Partner will seek to mitigate potential exposure through agreed cost and improvement parameters, beyond which they will be entitled to relief as a variation. | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in the toll road sector. | Emerging | X | | | The Contracting Authority may consider imposing obligations on the Private Partner to adopt and/or integrate with new tolling technologies or to allow for other foreseeable developments, such as driverless cars. | The Private Partner will seek to mitigate potential exposure through agreed cost and improvement parameters, beyond which they will be entitled to relief as a variation. | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return; the compensation of equity might be limited to an amount calculated as net capitalised earnings at the time of termination.<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; Senior debt might participate in the risk by being not compensated in full and equity compensation might be limited to an amount calculated as net capitalised earnings at the time of termination; and<br>(3) Private Partner default – the Private Partner would typically be entitled to an amount equal to a pre-set percentage (around 70- 85%) of the scheduled outstanding debt, minus damage claims of | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default.<br>While project lenders are therefore exposed to a project default, they are secured by step-in rights which entitle them to step into the contract with the Contracting Authority. Further, in the event of a termination due to no parties' default the equity compensation serves as a buffer.<br>The Private Partner will also mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | Early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | the Contracting Authority, with no equity compensation. Alternatively, the (assumed) price for the concession from a (deemed) retendering of the concession minus any damages and costs for early termination and retendering might be paid | | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for :<br>(1) Contracting Authority default – the Private Partner would get senior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity; and<br>(3) Private Partner default – the Private Partner would typically get a payment that is a function of the input cost of the project (construction value / book value) or the outstanding senior debt.<br>In many emerging markets it is common 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. While it may seem that project lenders therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default.<br>The Private Partner will mitigate risks by appropriately allocating such risks to appropriate subcontractors. | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | In emerging markets, there may also be sovereign guarantees which support the Contracting Authorities payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

# Risk Matrix 2: Airport (DBFO)

- A new greenfield airport project, developed as a DBFO transaction
- Operations include landside and airside services
- Customs, passport and air traffic control remain public sector obligations
- Key risks
  - Completion (including delay and cost overrun) risk
  - Demand risk
  - Force majeure risk

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Archaeological<br>Existing pollution.<br>Noise. | Developed | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or extensively surveyed and warranted or, in the case of utilities to be provided near to the time of completion, if state owned or capable of influence. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks or munitions) are likely to need to be held by the Contracting Authority.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference particularly in the case of noise and air pollution. | The Contracting Authority should undertake detailed environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process. The Contracting Authority may itself conduct detailed ground surveys or leave this to the preferred bidder. However, in the case of the preferred bidder conducting its own detailed survey this may lead to a charge in price.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority should (in view of the sensitivity of airport development), through legislation and a proper consultation process, limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection , in particular, noise and air pollution. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site. If the effect of increased costs or air pollution is increased the state or local authorities may need to relocate people or pay compensation.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. However, in the case of large scale demonstrations and criminal actively, this will need to be carried out by state security. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the | Emerging | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for | The Contracting Authority should undertake detailed ground, environmental and social | The Contracting Authority may need to use its legislative powers to | Land rights and ground conditions (in particular reliable utilities records, and |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Archaeological<br>Existing pollution.<br>Noise. | | | | | the project.<br>The Contracting Authority would generally be responsible for providing a “clean” site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed and warranted. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to be held by the Contracting Authority.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference.<br>We have seen the contrary position adopted in an equivalent PPP project in Colombia, the land purchase and site risks are typically allocated within the Private Partner risks. It must undertake at least, and not necessarily limited to: i) the land purchase (including the direct agreement with owners or title holders and, if necessary, initiating expropriation procedures); ii) the submission until its issuance of all the necessary environmental permits and licences, including water, air, noise and waste management; iii) the previous consultation process with communities whenever there is a “titled community” (eg. Indigenous, afro-descendants or constitutionally protected tribes, communities or settlements); iv) the acquisition and arrangement of public services provision to the infrastructure; v) Planning and designs approval before the competent municipal or regional authority for any works on the land; vi) provision of private security for better control and safety of the infrastructure (although the police and army security work is public). For the case of archaeological findings the risk is shared. The Private Partner assumes all | assessments and should disclose such information to the Private Partner as part of the bidding process. The Contracting Authority may itself conduct detailed ground surveys or leave this to the preferred bidder. However, in the case of the preferred bidder conducting its own detailed survey this may lead to a charge in price.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection, in particular noise and air pollution. | secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. However, in the case of large scale demonstrations and criminal actively, this will need to be carried out by state security. | land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. See comments on “Environmental and Social Risk” for an airport project in emerging markets. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | the future loss of income earnings derived from archaeological findings, including mineral mines or other deposits or fields, while the Public Partner assumes the direct loss (*damnum emergens*) derived from those same findings. The allocation of this risk may depend on whether the Contracting Authority had secured a site and/or whether a project is unsolicited. | | | |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Developed | | X | | The Private Partner will have primary responsibility to accept the project site in an “as is” condition, subject to the Contracting Authority’s disclosure of relevant matters, and manage the environmental and social strategy across the project, as well as obtaining all required licenses, permits and authorisations as necessary.<br>Existing environmental risks of the site prior to the Private Partner’s acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the Contracting Authority. This is on the assumption that the Private Partner has had the opportunity to carry out its own environmental survey and has done so. See comments on “Land purchase and site risk” for an airport project in developed markets.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner. However, this may be carried out in more detail by the Private Partner once it is appointed preferred bidder.<br>The Contracting Authority will be required to review all environmental and social plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project.<br>Lenders will expect to see a plan to see how these aspects are dealt with and that these comply with the Equator Principles (if applicable to the project).<br>Certain investors, such as DFIs, will have their own requirements for environmental and social plans. In particular in relation to noise pollution and will require that these are provisions in agreements that will lead to remediation or mitigation. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins.<br>Airports are major pieces of general infrastructure with particular problems of noise and air pollution affecting local communication. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the | Emerging | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project; however existing environmental conditions which cannot be adequately catered for or priced may need | | Government will need to take meaningful steps both before and during the project to manage social impacts of construction and | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | environment or local communities | | | | | to be retained by the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | | operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may need to be contractualised. | Equator Principles and their own policies. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Approval of detailed designs.<br>Changes to design. | Developed | | X | | Because an airport is either a national or local matter of pride and importance the Contracting Authority may have hired a leading firm of architects to design the airport and to provide the outline specification. In these circumstances the Private Partner will be required to adopt the outline design and to provide detailed design that fits in with this, whilst still ensuring that the airport will comply with the output specifications set by the Contracting Authority.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the output specification.<br>If the output specification is too prescriptive (e.g. the terminal design constrains the efficiency of the design or the throughput of passengers) 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. | A detailed design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner; however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability.<br>The detailed design review process should not be too prescriptive because if it is then the benefits of providing for private sector innovation and efficiency gains in the design will be diminished.<br>In addition, if the detailed design review and approval process is too lengthy it can lead to delays in construction which may ultimately impact upon the achievement of milestones by targeted dates. This can also be the case if the Contracting Authority seeks to amend the outline specifications (or previously approved detailed design) which can lead to both delays and additional cost of the necessary changes to detailed design. | | Developed market airport projects benefit from stable resource availability and defined design standards which allow for increased innovation and productivity gains. The quality of the information provided by the Contracting Authority and limited ability to verify such data can also hinder the Private Partner's ability to unconditionally take full design risk. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Approval of detailed designs. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on | The Contracting Authority may wish to consider how prescriptive it should be in the output specification. It may wish to request a degree of cooperation and feedback during the bidding phase to ensure that | | |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | Changes to design. | | | | | how prescriptive the Contracting Authority is in the output specification.<br>If the output specification is too prescriptive (e.g. the terminal design constrains the efficiency of the design or the throughput of passengers) 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.<br>Delay in approving designs would typically be a Contracting Authority risk. | the bidding consortia's expectations in terms of an appropriate risk allocation for design responsibility are taken into account when finalising the output specification.<br>The detailed design review process should not be too prescriptive because if it is then the benefits of providing for private sector innovation and efficiency gains in the design will be diminished.<br>In addition, if the detailed design review and approval process is too lengthy it can lead to delays in construction which may ultimately impact upon the achievement of milestones by targeted dates. This can also be the case if the Contracting Authority seeks to amend the outline specifications (or previously approved detailed design) which can lead to both delays and additional cost of the necessary changes to detailed design. | | |
| Construction risk | Labour dispute. Interface/ project management.<br>Commissioning damage.<br>Intellectual property breach / infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply | Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may is an effective strategy.<br>The Private Partner will seek to mitigate by appropriately allocating risks to the relevant subcontractors and may agree on a lump sum price with subcontractors in order to exclude or limit the risk of cost overrun. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |

| **Risks** | | | **Allocation** | | | | **Mitigation** | **Government Support Arrangements** | **Market Comparison Summary** |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | | | |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>Intellectual property breach / infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case the construction risk could be shared.<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of any IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may is an effective strategy.<br>The Private Partner will seek to mitigate by appropriately allocating risks to the relevant subcontractors and may agree on a lump sum price with subcontractors in order to exclude or limit the risk of cost overrun. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | 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 an emerging market context the dynamics may be different if the lenders have a significant underwrite of their senior debt. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br><br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br><br>The Private Partner is best placed to integrate complex civil works, the delivery, integration and commissioning of the systems and machinery at the airport, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br><br>The Private Partner will be expected to demonstrate adequate system performance before it is given permission to operate the system. Airport projects require complex commissioning and testing regimes given the intricacies involved in ensuring that the check-in, customs, baggage handling and the wider system will meet the necessary reliability and punctuality and throughput requirements of the output specifications.<br><br>Many DBFO airport projects provide for the Private Partner to pay a periodic fixed and a variable concession fee (often based on gross revenue) to the Contracting Authority. In airport PPP projects in Colombia, for those concessions which have royalties in favour of the Contracting Authority, such royalty is standardized as a fixed percentage of a determined income of the Private Partner (eg. Gross Income). If the project is late in achieving completion then the Contracting Party will not receive the expected concession fees from the expected date. Therefore the Contracting Party will often seek to impose liquidated | The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a “longstop date” (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivise timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br><br>Insurance will be taken out by the Private Partner that will compensate it in a number of circumstances where it is not entitled to compensation for extra costs (including liquidated damages) and loss of revenue from the Contracting Authority. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br><br>The Contracting Authority may allow for certain relief events, delay events, compensation events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events. The type of event will be relevant in relation to whether the Private Partner is entitled to just relief from termination, extra time to achieve completion or compensation for additional costs or loss of revenues due to the specific event.<br><br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time.<br><br>Transport to and from the new airport is usually extremely important and if the state is providing new road or rail links to the airport the Private Partner will need this to be provided on time for the opening or by a specific time thereafter if a build- | In developed markets, enforcement of construction deadlines and budgets may be easier as the Private Partner will typically have more experience and reliable resources. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | damages on the Private Partner to compensate the Contracting Authority for its loss. | | up of traffic at the airport is envisaged that will necessitate such link(s) being provided at a later date. | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs. In addition to those risks, in Colombian PPP projects, the Private Partner will typically be subject to fines for delayed works, and even could be subject to trigger an event of default which may lead to the administrative lapsing of the contract.<br>The Private Partner is best placed to integrate complex civil works, the delivery, integration and commissioning of the systems and machinery at the airport and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected demonstrate adequate system performance before it is given the permit to operate the system. Airport projects require complex commissioning and testing regimes given the intricacies involved in ensuring that the check in customs, baggage handling and the wider system will meet the necessary reliability and punctuality and through put requirements of the Output Specification.<br>Many DBFO airport projects provide for the Private Partner to pay a periodic fixed and a variable concession fee (often based on gross revenue) to the Contracting Authority. If the project is late | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies, particularly in markets where this may be the first time an asset of this nature has been procured. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay events, compensation events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events. The type of event will be relevant in relation to whether the Private Partner is entitled to just relief from termination, extra time to achieve completion or compensation for additional costs or loss of revenues due to the specific event.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | Some emerging market airport projects 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. The role of lenders and their advisers are important gauge for a Contracting Authority – if lenders accept the completion risk profile. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | in achieving completion then the Contracting Party will not receive the expected concession fees from the expected date. Therefore the Contracting Party will often seek to impose liquidated damages on the Private Partner to compensate the Contracting Party for their loss. | | | |
| Performance/ price risk | The risk that the project is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | X | | The Private Partner bears the risk of meeting the performance specification and for the other risks specified (see in relation to Expansion).<br>The Contracting Authority is responsible for enforcing the regime and for ensuring that the output specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels, and the appropriateness of metrics given the nature of the project.<br>Often the Contracting Authority wishes to provide for expansion of the airport in order to provide for an increase in passengers and/or aircraft movements. This may involve an expansion of existing terminal(s), a new terminal or an additional runway. The Contracting Authority may require that the Private Partner is obliged to carry out the expansion. The Private Partner will only agree to carry out the expansion if it can be justified and the Private Partner will not lose money or not be able to service its existing debt (if the airport has been project financed) plus any additional debt to be taken on to finance the expansion. | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based on passenger waiting times and throughput and quality of service can be measured against pre-determined schedules or standards.<br>The trigger for airport expansion should be forward looking and based on upward trends in passenger numbers over a number of years. The trigger should not just be one year (or a couple of years) if this is potentially unsustainable. The expansion will need to lead to a demonstrable increase in airport revenues that will be capable of paying operating costs, allowing debt service (with a margin above joint servicing debt in order to justify lenders' requirements for the Private Partner to meet ratio requirements) as a return on investment for the Private Partner. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. These would include insufficient resources provided for customs or border checks which leads to slower movement through the airport or air traffic controllers strikes (such as in France every summer). These cause flight cancellations not just at the affected airport but at other airports in other countries. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements | Emerging | | X | | The Private Partner bears the risk of meeting the performance specification and the other risks specified (but see in relation to Expansion).<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the | The Private Partner may need to require the Contracting Authority to reduce the performance requirements during the settling in period and possibly readjust the performance metrics once the performance of the project has settled down. This would mitigate the risk of long-term | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. These would include insufficient | For emerging 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. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | | | | | ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based.<br>Often the Contracting Authority wishes to provide for expansion of the airport in order to provide for an increase in passengers and/or aircraft movements. This may involve an expansion of existing terminal(s), a new terminal or an additional runway. The Contracting Authority may require that the Private Partner is obliged to carry out the expansion. The Private Partner will only agree to carry out the expansion if it can be justified and the Private Partner will not lose money or not be able to service its existing debt (if the airport has been project financed) plus any additional debt to be taken on to finance the expansion.<br>In Colombian PPP projects, in cases of International Armed Conflicts, terrorist acts, civil war, coups d'état, national or regional strikes there is shared risk (as for the archaeological risk), the Private Partner assumes the future loss of income earnings derived from those situations while the Public Partner assumes the direct loss (*damnum emergens*). | performance failure.<br>The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based on passenger waiting times and throughput and quality of service can be measured against pre-determined schedules or standards.<br>The trigger for airport expansion should be forward looking and based on upward trends in passenger numbers over a number of years. The trigger should not just be one year (or a couple of years) if this is potentially unsustainable. The expansion will need to lead to a demonstrable increase in airport revenues that will be capable of paying operating costs, allowing debt service (with a margin above joint servicing debt in order to justify lenders' requirements for the Private Partner to meet ratio requirements) as a return on investment for the Private Partner. | resources provided for customs or border checks which leads to slower movement through the airport or air traffic controllers strikes (such as in France every summer). These cause flight cancellations not just at the affected airport but at other airports in other countries. | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>The management of costs is particularly important where the Private Partner is paying a periodic variable concession fee to the Contracting Authority based on gross, rather than net, revenue.<br>Therefore any increase in costs will not decrease the amount payable to the Contracting Party (possibly with some limited exceptions such as increases in tax or the pass through costs of utilities to airport users such as police, customs, air traffic control, etc.) but will reduce the | The Contracting Authority will be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary.<br>Some of the cost risk can be managed on demand-risk projects, such as airports, by passing the risk through to the user by way of increases in airport duties or other charges to airlines or users. However, the ability to do this may be limited as airport projects tend to be demand elastic (i.e. costs to airlines go up so they reduce | | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern; however energy costs may still vary significantly over the course of project that must be accounted for. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | amount available to pay the other costs of operations, service debt and provide a return to the Sponsors. | flights to the airport and the revenue goes down). | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>The management of costs is particularly important where the Private Partner is paying a periodic variable concession fee to the Contracting Authority based on gross, rather than net, revenue.<br>Therefore any increase in costs will not decrease the amount payable to the Contracting Party (possibly with some limited exceptions such as increases in tax or the pass through costs of utilities to airport users such as police, customs, air traffic control, etc.) but will reduce the amount available to pay the other costs of operations, service debt and provide a return to the Sponsors.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as availability of energy supply, or reliance on local source materials where these may be affected by labour disputes, embargos or other political risks. | The Contracting Authority will be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary.<br>Some of the cost risk can be managed on demand-risk projects, such as airports, by passing the risk through to the user by way of increases in airport duties or other charges to airlines or users. However, the ability to do this may be limited as airport projects tend to be demand elastic (i.e. costs to airlines go up so they reduce flights to the airport and the revenue goes down).<br>Lenders may look to sponsors for completion support. | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner's financing for these costs. | Emerging markets are generally more susceptible to market volatility and major cost variations. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Developed | | X | | The default position for airport projects in developed markets is for the Private Partner to retain demand and traffic risk (risk of flight and passenger numbers and total revenue receipts).<br>Where the demand risk is allocated to the Private Partner, or the extent that aircraft movements and/or passengers and so revenue may be insufficient to cover the cost of constructing, financing and operating the project in question, as well as meeting the likely project contingencies, then some form of Contracting Authority support will be required, and the Contracting Authority may need to retain an element of demand risk. | As it will be absorbing this demand risk, the Private Partner should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | The Contracting Authority may agree to defer all or part of the concession fee if there is a shock event. | In developed markets, the Private Partner should have access to various data sources to develop realistic and attainable traffic and revenue forecasts (in the absence of shock events), such that the Private Partner is well placed to manage demand and traffic risk (although traffic forecasts are almost always too high). |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | Although the general position is that the Private Partner takes demand risk there is usually an exception to this for so-called "shock events". These are events or circumstances that may not occur within the country in which the airport is situated but which cause a significant fall in traffic within a certain period but which would not qualify as force majeure. For example, 9/11 would be a shock event as it had a significant effect for several years on air travel worldwide but the global financial crisis may not have been treated as a shock event. The effect of a shock event is to reduce significantly the revenues of the airport to such an extent that it is either not capable of paying its operating costs, servicing debt and meeting its banking ratios and paying the concession fee or it is forecast that it will not be able to do so. In this situation all or an amount of the variable concession fee may be deferred until things have stabilised and the full concession fee can once again be paid in full together with payment of deferred amounts. | | | |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers / users | Emerging | | X | | The default position for airport projects in emerging markets is for the Private Partner to retain demand and traffic risk (risk of passenger numbers and total revenue receipts).<br><br>To the extent that aircraft movements and/or passengers and so revenue may be insufficient to cover the cost of financing and operating the project in question, as well as meeting the likely project contingencies, then some form of Contracting Authority support within the payment structure will be required, and the Contracting Authority may need to retain an element of demand risk.<br><br>Although the general position is that the Private Partner takes demand there is usually an exception to this for so-called "shock events". These are events or circumstances that may not occur within the country in which the airport is situated but which cause a significant fall in traffic | Both the Contracting Authority and Private Partner should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br><br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | There may need to be an element of subsidy from the Contracting Authority if demand falls below a certain amount. If this is structured as a "cap and collar" arrangement then the Contracting Authority should also start to benefit from economic upsides above the Private Partner's base case.<br><br>If there is high uncertainty over passenger projections and uncertainty over revenues (due to tariff limitations and/or currency volatility) then the project may need to be structured on the basis of an availability fee and this may be more | Most demand risk airport projects in the world have over- estimated passenger and traffic numbers and restructurings have been common. This creates a difficulty for Contracting Authorities in emerging markets, particularly in the case of market first projects, where there is likely to be a lack of relevant comparative market data to begin with. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | within a certain period but which would not qualify as force majeure. For example, 9/11 would be a shock event as it had a significant effect for several years on air travel worldwide but the global financial crisis may not have been treated as a shock event. The effect of a shock event is to reduce significantly the revenues of the airport to such an extent that it is either not capable of paying its operating costs, servicing debt and meeting its banking ratios and paying the concession fee or it is forecast it will not be able to do so. In this situation all or an amount of the variable concession fee may be deferred until things have stabilised and the full concession fee can once again be paid in full together with payment of deferred amounts. | | appropriate in markets where access to aviation transport has been limited in the past. | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set out in the output specifications defined by the Contracting Authority.<br>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 project model instances, work stemming from implementing technological or structural changes.<br>The Contracting Authority may retain the responsibility of performing certain services at the airport which it believes are appropriate or which by law cannot be provided by the Private Partner. These may include security and police, customs and border control and fire services. The Private Partner may be required to provide suitable accommodation for these people at the airport either for free or at cost.<br>The Private Partner takes the primary risk that the airport and its systems will be maintained to a sufficient level of quality and reliability to ensure that it can attract passengers and airlines. However where | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the concession agreement. There will be requirements that will need to be met by the Private Partner on hand back and a reserve account or bonding may be required to be provided by the Private Partner as security for its obligations.<br>The primary role of the Contracting Authority is to properly define the output specifications and level of services required of the Private Partner.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services (with the exception of minor management services) reduces the benefits of the DBFO project model.<br>The required performance standard KPIs for an airport will often include KPIs relating to the experience and availability at check in, in customs/immigration and security. If these functions are not fully under the control of the Private Partner and failure to meet the relevant KPI may be due to lack of performance by a public sector retained service (such as insufficient people at immigration gates or security) so that | In developed markets, the involvement of the Private Partner in the operation, maintenance and rehabilitation of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | the system constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties). | allowed to require additional payment from the Private Partner based on failing to meet certain performance standards. There may also be other remedies such as warning notices and right to require replacement of replace subcontractors. | throughput targets are not met, then the Private Partner may require relief from any penalties. In some cases if this causes cost or loss of revenue to the Private Partner it may be a compensation event. | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have principal responsibility for maintaining the system to the appropriate standards set out in the output specification defined by the Contracting Authority.<br>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 project model instances, work stemming from implementing technological or structural changes.<br>The Contracting Authority may retain the responsibility of performing certain services at the airport which it believes are appropriate or which by law cannot be provided by the Private Partner. These may include security and police, customs and border control and fire services. The Private Partner may be required to provide suitable accommodation for these people at the airport either for free or at cost.<br>The Private Partner takes the primary risk that the airport and its systems will be maintained to a sufficient level of quality and reliability to ensure that it can attract passengers and airlines. However where the system constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties).<br>Even though under a Colombian PPP project perspective this risk is also | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement.<br>There will be requirements that will need to be met by the Private Partner on hand back and a reserve account or bonding may be required to be provided by the Private Partner as security for its obligations.<br>The primary role of the Contracting Authority is to properly define the output specifications and level of services required of the Private Partner.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to require additional payment from the Private Partner based on failing to meet certain performance standards. There may also be other remedies such as warning notices and right to require replacement of replace subcontractors. | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services (with the exception of minor management services) reduces the benefits of the DBFO project model.<br>The required performance standard KPIs for an airport will often include KPIs relating to the experience and availability at check in, in customs/immigration and security. If these functions are not fully under the control of the Private Partner and failure to meet the relevant KPI may be due to lack of performance by a public sector retained service (such as insufficient people at immigration gates or security) so that throughput targets are not met, then the Private Partner may require relief from any penalties. In some cases if this causes cost or loss of revenue to the Private Partner it may be a compensation event. | Some projects in emerging markets have been procured on a D&B 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 system components and equipment to allow the operator to manage the ongoing maintenance and performance risk. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | allocated as a Private Partner risk, a typical distinction is made between the airport concessionaire and the airport operator. Despite that the airport concessionaire as the awarded contractor for the project is the primarily responsible for the maintenance of the infrastructure/assets, the airport operator, as a different legal person in many cases, is joint and severally liable for those same risks. Additionally, in certain specific cases, the concessionaire of the airport is different form the concessionaire of the runways. In this case, the maintenance risk is allocated to each concessionaire regarding the concession specific scope. | | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prevent performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief from performing its obligations.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) pressure waves caused by devices traveling at supersonic speeds; or (v) discovery of any species-at-risk, fossils, or historic or archaeological artefacts.<br>Force majeure events occurring during construction will also cause a delay in completion and therefore revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure may require relief from KPI penalties or an element of temporary reduction or suspension of concession fee payments may be required. | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>The risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties).<br>If the effect of the force majeure event is to reduce the revenues of the Private Partner then the amount of the variable concession fee should be rateably reduced. However, it will be a matter of negotiation as to whether any fixed concession fee should continue to be payable in full.<br>Increased security costs as a result of terrorist events (even in different countries) may also need to be addressed given | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, after a number of months of continuous force majeure either party should be entitled to terminate the concession contract. If the Contracting Authority does not want the concession contract to be terminated then the Contracting Authority shall pay the Private Partner the actual additional cost of continued operating and an amount of compensation in order to service the Private Partner's debt obligations during the course of the event.<br>Whether the debt can be fully serviced in such a scenario prior to the possible time for termination, will be a key area of focus for prospective lenders as | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a "natural" force majeure. |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | heightened security concerns. | part of their initial credit assessments.<br>Where the project is terminated by either party, the Contracting Authority will normally be required to compensate the Private Partner fully for debt owed to the lenders.<br>The Contracting Authority may also agree to pay compensation to the Private Partner on a "no fault" basis so that the Private Partner is paid an amount equal to the amount it had invested in the project less any returns it had received in respect of that investment until termination. However, this will be a matter of negotiation on a project by project basis. | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and you would expect to see a fairly well developed list of events that entitle the Private Partner to relief.<br>Emerging markets typically distinguish between Government and non-Government force majeure with the Contracting Authority assuming more risk for Government force majeure.<br>In Colombian PPP projects the risk allocation is somewhat different. Force majeure is typically allocated to the Private Partner (with the caveat of the shared risk allocation in cases of International Armed Conflicts, terrorist acts, civil war, coups d'état, national or regional strikes) which should seek insurance coverage for those insurable events. Additionally, it undertakes the risk of regulatory or constitutional changes that might affect its performance or revenue. Nevertheless, it is important to note that there is a well-established jurisprudence | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>The risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties).<br>Increased security costs as a result of terrorist events (even in different countries) may also need to be addressed given heightened security concerns. | Termination payment for prolonged force majeure may differ depending on the type of force majeure. Lenders will expect to see debt covered by Contracting Authority and/or insurance payments. | Termination payment for prolonged force majeure may differ depending on the type of force majeure. Lenders will expect to see debt covered by Contracting Authority and/or insurance payments. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | that protects the Private Partner in cases of force majeure when such event produces a breach of the economic equilibrium of the contract. Is a theory that derives from the *Rebus Sic Stantibus* maxim and which seeks to protect the incentive and economic stability of the Private Partner. | | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | There can be currency risk, not just in relation to the construction cost of the airport itself, but in a mismatch between the currency in which the concession fees are payable and the currencies in which the various revenue streams at the airport are received.<br>The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements.<br>However, if the revenues of the airport, such as for airline charges and retail, duty free and food and beverage are received in local currency, the concession fee to the Contracting Authority should not be payable in, for example, US Dollars or Euros (or vice versa). | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks if there is not a currency mismatch between revenues and the concession fee. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support if there is not a currency mismatch between revenues and the concession fees. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Emerging | | | X | There can be currency risk, not just in relation to the construction cost of the airport itself, but in a mismatch between the currency in which the concession fees are payable and the currencies in which the various revenue streams at the airport are received.<br>The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility or currency convertibility problems or delays. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of adjustments in the amount of charges, but the ability to do this may be limited as airport projects tend to be demand elastic (i.e. charges go up and flights (and so passengers) go down). | As landside revenue will be collected in local currency (and possibly airport charges too in some cases) the Contracting Authority may need to retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | In emerging market airport projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" arrangement from the Contracting Authority with reductions in the concession fees payable. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable.<br>The cost of obtaining the required insurance is more expensive than anticipated.<br>There is a significant insured event and | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors.<br>There will be detailed consideration given to this by the insurance advisers to the Private | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances or an act or threat of terrorism. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | whether reinstatement should occur. | | | | | risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>If the cost of insurance increases above specified amounts this increased cost may be shared by the parties.<br>If there is a major insured loss at the airport, if the airport has been project financed the lenders will usually require that if the likely insurance proceeds are above a specified amount, an economic test is carried out to ascertain whether if reinstatement were to occur (a) would the insurance proceeds be sufficient to pay for the full cost of the reinstatement, (b) would the Private Partner be able to service its debt in full and pay other operating costs whilst the reinstatement took place (and this will often depend on the sufficiency of the advance loss of revenue or business interruption insurance) and (c) will the debt be repaid on its scheduled repayment dates. If one or more of these conditions is not satisfied the lenders will require that the insurance proceeds will be applied in prepayment (even though in this scenario the amount of insurance proceeds that will be paid will be less than the reimbursement cost). | Partner and to the lenders if there is project financing.<br>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. termination of the project on the same terms as if it were an event of force majeure).<br>The Private Partner's sponsors and/or the Contracting Authority may consider that it would be to their benefit to ensure that the airport is reinstated, rather than the lenders taking the insurance proceeds and applying these in prepayment of their loan, by agreeing to pay off the lenders or provide a top up to ensure that a loan life cover ratio test could be passed. | | having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project (and pay compensation on usually the same basis as termination for force majeure) or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>An additional option that is typically included under the PPP contracts in Colombia is, that whenever the Private Partner is unable to insure the obligatory policies provided in the contract (eg. Stability of works policy, salary payment policy, performance policy), for the reason that such policy does not exist in the Colombian market, the contract may be terminated without penalty or default attributed to the Private Partner.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable and if Contracting Authority wishes for the Private Partner to continue with the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | | | |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Cancellation of bilateral treaties or failure to maintain membership of international bodies.<br>Industrial action by public sector airport workers. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to maintain in existence the licenses (unless the termination or non-renewal is due to default by the Private Partner) and access to the airport and transport links necessary to allow the Private Partner to fulfil its obligations.<br>Industrial action by workers at the airport who are to transfer to the Private Partner can be an issue if their conditions are not as good or they perceive that they may be disadvantaged in the future. Also customs workers and air traffic controllers often remain public sector employees and can be prone to taking industrial action that can cause the Private Partner to fail to meet performance targets at the airport or suffer loss of revenue. | The Contracting Authority will outline certain political events as delay events, compensation events, excusing causes that involve a breach of obligations or interference by the Contracting Authority with the project.<br>Strikes by public sector workers are often treated as a relief or similar event that means the Private Partner will not be in breach of performance obligations. | This type of issue will typically lead to a termination event where the Contracting Authority will need to compensate debt and equity in full. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control and the Contracting Authority will be responsible should it fail to maintain in existence the licenses (unless the termination or non-renewal is due to default by the Private Partner) and access to the airport and transport links necessary to allow the Private Partner to fulfil its obligations.<br>This concept may include any "material adverse Government action" (broadly speaking any act or omission of any Government entity which has a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession agreement) and may also include a specific list of events of a political nature such as expropriation, interference, | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination event where the Contracting Authority will need to compensate debt and equity in full potentially with a Government guarantee. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |

| Risks<br>Category | Description | Variable | Allocation<br>Public | Private | Shared | Rationale | Mitigation<br>Measures | Government Support Arrangements<br>Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | general strikes, discriminatory changes in law (see section on regulatory/change in law risk), as well as more general uninsurable events such as risks of wars / riots / embargos etc.<br>The Private Partner would expect compensatory relief. The Government may not always be able (or is unwilling) to pay such compensation, Therefore the Private Partner may also need an ability to exit the project if the political risks continue for an unacceptable duration.<br>In Colombian PPP projects the political risk, understood as, the risks derived from regulatory and Constitutional changes including any legislative, political or macroeconomic effect over the Concession, is allocated as a Private Partner risk. Even though the Private Partner has not control over these situations, whatsoever, the contractual design disables it to transfer or share the risk with the Public Partner. Additionally, as these are typical “non-insurable” risks, they imply the obligation from the Private Partner to directly assume the risks. It may be noted that the “breach of the economic equilibrium of the contract” may also be in place for these type of situations. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) Specific (to the airport sector) or (iii) General Change in law.<br>A change in law is often subject to a threshold before the Private Partner is entitled to compensation particularly in the case of general change in law where the threshold may be different depending on whether it relates to capital expenditure, increased operating costs or loss of revenue.  It may also vary (or not exist) | Change in law risk that is retained by the Private Partner may be mitigated by allowing increases in costs by virtue of indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Change in law risk may also be mitigated where there is an ability to pass costs relating to changes in law to airport users (but see comments about limits on this).<br>Some projects only permit the Private Partner to claim relief for | Past concession models (including that developed 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 SOPC model had already | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | depending on if it is during the construction period and foreseeable or whether the cost of compliance can be passed on to passengers or airlines. There may be restrictions on what increases the Private Partner can pass on and also economic restraints and raising costs may reduce usage and so revenues.<br>Changes in law will always entitle the Private Partner to a Variation where this is necessary to avoid an impossible obligation or allow extra time to achieve compliance with the changed law. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred.<br>Where the payment structure of an airport project is a concession fee payable to the Contracting Authority based on gross, rather than net, revenues an increase in taxation will increase the costs of the Private Partner without providing any relief in relation to the amount of the concession fee payable. This will reduce the amount available to the Private Partner to pay operating costs and debt service. If there are restrictions on increases in airport charges then the Private Partner may not be able to pass the cost of the increase in the taxation on to the airport users, as would be the case with other businesses that were not operating in a similar price regulated environment.<br>Even if there are no price controls, the Private Partner cannot just increase charges to airlines without meeting resistance, either because they have printed their brochures and themselves cannot pass on the extra charges to their customers or because they will reduce their usage of the airport. For these reasons, Private Partners have often sought and received protection from tax increases above thresholds by reduction in concession fee rates. This has generally not been the case with increases in taxes and duties on duty free | general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress) or the construction period is such that any further relevant changes in law have been announced or are foreseeable and can be taken account of in the construction budget and timetable. | taken this approach. Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise - changes in charges may be possible but given the demand elasticity in the airport sector this may have a detrimental effect on the number of flights and/or passengers. | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | goods or food and beverage sales. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | X | | | The Contracting Authority typically bears principal responsibility for changes in law post-bid / post-contract signature.<br>There may be a degree of risk sharing with the Private Partner and there may be certain risks that the Private Partner is expected to bear alongside the remainder of the market.<br>The Private Partner would look to be kept whole in respect of changes of law which are discriminatory (towards the project or the Private Partner), or specific (to the airport sector).<br>The Private Partner may also receive protection against other (general) changes in law, however the level of protection will reflect the Private Partner's ability to mitigate this risk (through the cost increase or inflation regime, if applicable) and whether the risk is of general application to the market (e.g. an increased tax on corporate tax or dividends across the board). It may also be appropriate for the Private Partner to bear a certain financial level of risk before compensation becomes payable, to ensure that claims are only made for material changes in circumstances.<br>Changes in law should always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation or allow extra time to achieve compliance with the changed law, or otherwise should give rise to a right to terminate (typically on a Contracting Authority default basis).<br>In the Colombian context, the political risk is relevant to regulatory/change in law (see section on political risk). Nevertheless, when the regulatory change implies a lessening of the Private Partner revenue due to unfavourable effects derived from tariffs structure changes, the Public Partner is obliged to cover the loss of the Private Partner. | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | X | | Inflation risks are typically primarily borne by the Private Partner.<br>Demand risk projects such as airports need the ability to increase the charges to airport users or to increase prices, but this ability may often be restricted as raising airport charges is likely to be a sensitive political issue and may well have an impact on usage and so revenue. Therefore, the Private Partner may need additional Contracting Authority support because if the Private Partner's costs are increasing because of inflation the percentage of revenue increase may not keep pace so the difference between the costs and the amount the Private Partner has to pay in concession fees … putting pressure on the Private Partner's finances.. | The Contracting Authority may provide flexibility to increase charges to airport users (possibly up to limits) or allow additional increase in high inflation scenarios. | | |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | | X | | Inflation risk is typically primarily borne by the Private Partner.<br>Demand risk projects such as airports need the ability to increase the airport charges and prices for food and beverages, etc., but this ability may often be restricted (as raising charges and prices is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | The Contracting Authority may provide flexibility to increase charges to airport users (possibly up to limits) or allow additional increase in high inflation scenarios.<br>An additional comment on this regard is that one of the main concerns for financial institutions in Colombian PPP projects has been the risk of inflation associated to additional costs of the works. This risk has been addressed through closed priced EPC contracts with the inflationary risk allocated to the Private Partner or the EPC contractor, depending on each case. Hedges are also typical for addressing this risk, and usually additional securities from the Private Partner are demanded by the financial institutions. The inflationary risk as a macroeconomic effect is usually not covered by the Public Partner in airport concessions. | The Contracting Authority may need to provide a subsidy to the Private Partner if the user cannot bear the cost increase. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term beyond the point at which the increases in costs can be passed on to the airport users either because of price increase restrictions or because it will reduce usage and so revenue. |
| Strategic risk | Change in shareholding | Developed | | X | | Contracting Authority wants to ensure that | Contracting Authority will limit | | In developed markets the |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | | | | | the Private Partner to whom the project is awarded remains involved.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | Private Partners' 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, particularly in the equity investor markets and the added benefits of allowing capital to be 'recycled' for future projects. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period plus ramp up phase of operation).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In emerging markets, there is typically more restriction on Private Partner's ability to restructure or change ownership, although very restrictive provisions may deter investment. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in airport sector. | Developed | | X | | Digital technologies will allow for quicker, more efficient check in, baggage drops and security screening. This will reduce the time it is necessary to spend at the airport as much could be done at home or the office. The effect is to reduce the "dwell time" at airports which is likely to lead to less time in the shopping area so less spending and therefore less revenue for the airport derived from duty free and food and beverage sales.<br>Driverless cars when they are introduced will mean that it will be possible to travel to the airport in your driverless car and, rather than paying very high airport parking charges for the length of your trip, you could send the car home. Car parking revenue, which is a good source of revenue for airports, either directly or through fees charging to parking concessionaires, would be greatly reduced.<br>The increased usability and availability of digital communications such as virtual meetings and personal video conferencing may lead to less business travel and so lower aircraft movements and passengers | Airports could (as some are doing already) require passengers to turn up several hours before their flight and earlier than the time needed to undertake the more automated check in, baggage and security checks (and longer than the airlines themselves recommend) in an attempt to ensure passengers have to spend "dwell time" in the retail and food and beverage areas and so spend money. Reducing the number of seats for waiting passengers also increases the likelihood that they will need to buy food and drink to actually have somewhere to sit or wander around the shops and be tempted to spend.<br>When driverless cars are prevalent airports could introduce drop-off fees to compensate for reduced parking revenue.<br>The Private Partner would need | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | at non-tourist airports. Coupled with businesses' desire to reduce their carbon footprint and wishing to save money this could lead to lower revenues.<br>The need to mitigate the harmful effects of climate change may well lead to greater costs being imposed on airlines (which will pass them on to passengers) or on passengers directly will make flying more expensive and so reduce demand in some countries. | the flexibility to introduce this. | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in airport sector. | Emerging | | X | | Digital technologies will allow for quicker, more efficient check in, baggage drops and security screening. This will reduce the time it is necessary to spend at the airport as much could be done at home or the office. The effect is to reduce the "dwell time" at airports which is likely to lead to less time in the shopping area so less spending and therefore less revenue for the airport derived from duty free and food and beverage sales.<br>Driverless cars when they are introduced will mean that it will be possible to travel to the airport in your driverless car and, rather than paying very high airport parking charges for the length of your trip, you could send the car home. Car parking revenue, which is a good source of revenue for airports, either directly or through fees charging to parking concessionaires, would be greatly reduced.<br>The increased usability and availability of digital communications such as virtual meetings and personal video conferencing may lead to less business travel and so lower aircraft movements and passengers at non-tourist airports. Coupled with businesses' desire to reduce their carbon footprint and wishing to save money this could lead to lower revenues.<br>The need to mitigate the harmful effects of climate change may well lead to greater costs being imposed on airlines (which will pass them on to passengers) or on passengers directly will make flying more | Airports could (as some are doing already) require passengers to turn up several hours before their flight and earlier than the time needed to undertake the more automated check in, baggage and security checks (and longer than the airlines themselves recommend) in an attempt to ensure passengers have to spend "dwell time" in the retail and food and beverage areas and so spend money. Reducing the number of seats for waiting passengers also increases the likelihood that they will need to buy food and drink to actually have somewhere to sit or wander around the shops and be tempted to spend.<br>When driverless cars are prevalent airports could introduce drop-off fees to compensate for reduced parking revenue.<br>The Private Partner would need the flexibility to introduce this. | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | expensive and so reduce demand in some countries. | | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity repaid (less receipts); and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common under Colombian PPP projects structure, that due to Private Partner default the contract liquidation balance sheet turn out negative. This is due to the fact that fines and penalty clauses are applied when the Private Partner is in default and are usually discounted when an administrative lapsing occurs. In addition to this, it is not common that the Contracting Authority recognizes early termination payments to the Private Partner regarding future income loss, when the early termination is caused by a Private Partner default. Additionally, a key aspect under Colombian PPP project scheme is that early termination payments are not calculated based on the outstanding debt payment. Nevertheless, early termination payments are the general rule, and as | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/ with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | Early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | such it includes the payment of all the works entered into by the Private Partner not yet paid by the Contracting Authority.<br>It is common for the senior debt and hedging termination costs to be paid by the Contracting Authority, and for rights of set-off below that figure to be restricted in every scenario other than Private Partner default. In this scenario compensation from the Contracting Authority will typically be in a range between 100% and 95% of the senior debt and hedging termination costs. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not always have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity repaid (less receipts); and<br>(3) Private Partner default – the Private Partner would typically get a payment that is a function of the input cost of the project (construction value / book value) or the outstanding senior debt.<br>In many emerging markets it is common for the senior debt and hedging termination costs to be paid by the Contracting Authority, and for rights of set-off below that figure to be restricted in every scenario other than Private Partner default. In this scenario compensation from the Contracting Authority will typically be in a range between 100% and 95% of the senior debt and hedging termination | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The risk of the Contracting Authority not paying the compensation on termination may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project | In emerging markets, there may also be sovereign guarantees which support the Contracting Authorities payment obligations or central bank undertakings to make foreign currency available.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | costs. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not always have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | documents to a suitable substitute concessionaire. | |

# Risk Matrix 3: Light rail (DBFOM)

- New rail developed as a design, build, finance, operate and maintain (DBFOM)
- Assumes that the procuring entity identifies the site on which the project will be built
- Assumes that the rolling stock will be used on a light rail network
- Project scope may include associated infrastructure, such as tunnelling, interconnection with other transit nodes, and station and stop construction
- Emerging market is based on a concession to DBFOM in Nigeria
- Civil law comparison is based on a DBFOM in the Netherlands
- Key risks
  - Land purchase and site risk
  - Construction risk
  - Demand risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | | X | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>That said, there may be some areas where risk will be shared with the Private Partner. Whilst the Contracting Authority may be able to secure the availability of the corridor, the suitability of the corridor may be dependent on the Private Partner's design solution (such as catenary location for overhead power), as well as depot location etc.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed and warranted. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to be held by the Contracting Authority.<br>Where it is not possible to fully survey prior to award (eg identification of underground existing utilities in high density urban areas) risk will be allocated to Contracting Authority or shared.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference.<br>In a Dutch project, the Contracting Authority is the legal owner of the project's location (and where this is not the case, shall acquire the legal title to the location) and provides access to the Private Partner on the basis of the DBFOM contract. If no (timely) access is provided, the financial loss incurred by the Private Partner will be reimbursed by the Contracting Authority. The financial loss is calculated on the basis of an "open book" | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | principle. Site risk (pollution, archaeology, defects in existing infrastructure) is for the Contracting Authority, unless it was evident from the available project data or could have been evident to a professional contractor. | | | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects.<br>Utility Installations. | Emerging | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>That said, there may be some areas where risk will be shared with the Private Partner. Whilst the Contracting Authority may be able to secure the availability of the corridor, the suitability of the corridor may be dependent on the Private Partner's design solution (such as catenary location for overhead power), as well as depot location etc.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed and warranted. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to be held by the Contracting Authority.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference.<br>The removal and resettlement obligations on the Contracting Authority are continuing obligations and are typically undertaken in phases or sections at the request of the Private Partner from time to time in coordination with the construction programme. | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection.<br>Following the completion of the existing asset and utility survey, the Contracting Authority shall procure that the relevant owner, operator or manager of any utility installation enters into an agreement with the Private Partner to identify how to deal with the relevant utility installation. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets, where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. See comments on "Environmental and Social Risk" for a light rail project in emerging markets. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the | Developed | | X | | The Private Partner will have primary responsibility to accept the project site in an "as is" condition, subject to Contracting | The Contracting Authority should conduct the necessary due diligence in order to ascertain | The Contracting Authority will need to take meaningful steps both | Environmental scrutiny is increasing even in developed markets, as both Private |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | project and the subsequent risk of damage to the environment or local communities. | | | | | Authority's disclosure of relevant matters, and manage the environmental and social strategy across the project, as well as obtaining all required licenses, permits and authorizations as necessary.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the Contracting Authority. See comments on "Land purchase and site risk" for a light rail project in developed markets.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority. This type of risk does not occur in the Dutch PPP market. | the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project.<br>In the Dutch PPP market it will typically be the Private Partner's responsibility (together with its advisors) to determine whether any environmental plans are adequate for the project. | before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Emerging | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced may need to be retained by the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan on how these aspects will be dealt with. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the output specification.<br>If the output specification is too prescriptive (e.g. the required route corridor or track gauge constrains the | The Contracting Authority will often broadly draft the Private Partner's design and construction obligations to satisfy the output specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the design.<br>A design review process will allow for increased dialogue and | | Developed market rail projects benefit from stable resource availability and defined design standards which allow for increased innovation and productivity gains. The quality of the information provided by the Contracting Authority and limited ability to verify such data can also hinder the Private Partner's ability to unconditionally take full design risk. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | efficiency of the design or the choice of rolling stock) 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.<br>If the project is being integrated into existing infrastructure, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted (in that it will not be able to warrant defects in the existing infrastructure that may impact performance). | cooperation between the Contracting Authority and the Private Partner, however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability.<br>In a Dutch project, the output specifications are broadly defined so to allow the Private Partner's optimizations and innovative solutions. During the dialogue sessions in the tender phase, the output specifications can be changed or further detailed (ensuring level playing field between the candidates to abide by the public procurement principles). | | |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the output specification.<br>If the output specification is too prescriptive (e.g. the required route corridor or track gauge constrains the efficiency of the design or the choice of rolling stock) 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.<br>The prescriptiveness of the output specification is usually dependent on the depth of the feasibility study.<br>Any delay in approving designs is a Contracting Authority risk.<br>For changes to design – the risk allocation depends on the reason for the change. If the original design is deficient the Private Partner will retain the risk or if the change to the design is required by the | The Contracting Authority will need to decide how prescriptive it wants to be in the output specification.<br>It may wish to request be 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 take into account when finalising the output specification. | | Emerging market rail projects may be particularly dependent on availability of reliable traction power or fuel availability, which have implications for the Private Partner's ability to meet the reliability requirements in the output specification. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| **Category** | **Description** | **Variable** | **Public** | **Private** | **Shared** | **Rationale** | **Measures** | **Issues** | |
| | | | | | | Contracting Authority it may become a Contracting Authority risk. | | | |
| Construction risk | Labour dispute. Interface/ project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award.).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time.<br>The Contracting Authority may seek to enter into direct IP arrangements with the light rail stock designer/manufacturer to ensure it retains necessary IP rights in the event of Private partner IP infringement. | In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defects. | Emerging | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case the construction risk could be shared.<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme for completion of the works has sufficient float periods for all | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the | Some emerging market rail projects 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 an emerging market context the dynamics may be different if the lenders have a |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | | | | | Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of any IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | significant underwrite of their senior debt.<br>Late completion of rehabilitation or service extension works are most often addressed as lost opportunity for revenue by the Private Partner. There may also be a longstop date for completion. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction, holding costs of other contractors and extended site costs.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of rolling stock, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected to demonstrate adequate system performance before it is given permission to operate the system. Light rail projects | The Contracting Authority may wish to implement a multi-staged completion process to ensure the Private Partner begins receiving payment for its design and construction services once significant components of the project are substantially completed. This can help increase cash flow during construction, reduce the Private Partner's financing costs and incentivize the phasing of construction works in order to ensure critical components are completed on time. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents | In developed markets, enforcement of construction deadlines and budgets may be easier as the Private Partner will typically have more experience and reliable resources. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | require complex commissioning and testing regimes given the intricacies involved in ensuring that the rolling stock, power systems, signalling systems, operations centre and the wider system will meet the necessary reliability and punctuality requirements of the output specifications.<br><br>A Dutch project follows the same principles regarding responsibility, risk allocation and possible relief events (i.e. delay events, delayed completion events and compensation events).A look forward test applies in the event it has become evident that the commissioning shall not be achieved within the set timeframe. This can lead to termination of the contract. | will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br><br>The Contracting Authority may also consider the inclusion of a look forward test to trigger a default if an independent party certifies that completion will not be achieved by the longstop date. | in good time. | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC or EPCM contractor.<br><br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br><br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of rolling stock, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br><br>The Private Partner will be expected demonstrate adequate system performance before it is given the permit to operate the system. Light rail projects require complex commissioning and testing regimes given the intricacies involved in ensuring that the rolling stock, power systems, signalling systems, operations centre and the wider system will meet the necessary reliability and | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br><br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | Some emerging market rail projects 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 an emerging market context the dynamics may be different if the lenders have a significant underwrite of their senior debt.<br><br>The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed concession period for operation, or (ii) the scheduled construction period forming part of the fixed concession period (with extensions for certain events such as force majeure). With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | punctuality requirements of the Output Specification. | | | delay liquidated damages on the Private Partner. However this decision should always be assessed against the likelihood that genuine out-of pocket costs will actually be incurred for such delay, so as to avoid unnecessary contingency being built into the project (which then increases the 'price'). |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | X | | The Private Partner bears the risk of meeting the performance specification.<br>However, the Contracting Authority is responsible for enforcing the regime and for ensuring that the output specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels, and the appropriateness of metrics given the nature of the project. In a Dutch project this would be different. The Contracting Authority provides the Output Specifications at the start of the tender and any candidates will have to base their submissions on those specifications. During the dialogue sessions in the tender phase, the output specifications can be changed or further detailed (ensuring level playing field between the candidates to abide by the public procurement principles).<br>In an availability based payment structure the Private Partner may be subject to abatement if performance based standards are not met. | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based on train reliability, availability, punctuality and quality of service can be measured against pre-determined schedules or standards.<br>While this is correct in the general sense, in the Dutch PPP market the Private Partner will enter into dialogue sessions with the Contracting Authority in order to determine the definite Output Specifications requested for the project. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage, pollution accidents.<br>Meeting handback | Emerging | | X | | The Private Partner bears the risk of meeting the performance specification.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the | In projects expecting extremely high ridership the Contracting Authority, it may be difficult to achieve a meaningful punctuality / headway metric; it may be appropriate to focus on requiring the Private Partner to provide a volume driven output service.<br>The Private Partner may need to | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | For emerging 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. |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | requirements.<br>Health and safety.<br>Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion.<br>Segregation from traffic. | | | | | nature of the project and the emerging market in which it will be based. | require the Contracting Authority to reduce the performance requirements during the settling in period and possibly readjust the performance metrics once the performance of the system has settled down. This would mitigate the risk of long-term performance failure.<br>To the extent possible the route should be segregated from other traffic (eg road traffic or National Railway traffic) and the Private Partner should be given appropriate relief arising out of any interface issues between existing lines/projects. | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs. | The Contracting Authority will be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary.<br>The Private Partner may be incentivized, through a sharing mechanism, to increase efficiencies in energy consumption throughout the concession period. | Monthly payments to the Private Partner may include certain calculations that could alleviate uncontrollable cost increases due to increases in energy costs that would otherwise be borne by the Private Partner. | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern, however energy costs may still vary significantly over the course of project that must be accounted for. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as availability of energy supply, or reliance on local source materials where these may be affected by labour disputes, embargos or other political risks.<br>Time and cost risks are normally passed on to the Private Partner's subcontractors. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of fare adjustments, but the ability to do this may be limited as light rail projects tend to be highly demand elastic (i.e. fares go up and ridership goes down).<br>Lenders may look to sponsors for completion support. | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner's financing for these costs. | Emerging markets are generally more susceptible to market volatility and major cost variations. See comment on exchange rate for a light rail project in emerging markets. |
| Demand risk | The availability by both volume and quality | Developed | | X | | The default position for light rail projects in developed markets is for the Contracting | As it will be absorbing this demand risk, the Contracting | As the Contracting Authority will be retaining | In developed markets, the Contracting Authority should |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | | | | | Authority to retain demand and farebox risk (risk of passenger numbers and total revenue receipt).<br>Where the demand risk is allocated to the Private Partner, or the extent that farebox revenue may be insufficient to cover the cost of financing and operating the project in question, as well as meeting the likely project contingencies, then some form of taxation-based support within the payment structure will be required, and the Contracting Authority may need to retain an element of demand risk.<br>In a Dutch project, the demand risk remains with the Contracting Authority. | Authority should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | have access to various data sources to develop realistic and attainable ridership and revenue forecasts, such that the Contracting Authority is well placed to manage demand and farebox risk. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users.<br>Competing lines or modes of transport. | Emerging | | X | | The default position for light rail projects in emerging markets is for the Private Partner to retain demand and farebox risk (risk of passenger numbers and total revenue receipts).<br>To the extent that farebox revenue may be insufficient to cover the cost of financing and operating the project in question, as well as meeting the likely project contingencies, then some form of taxation-based support within the payment structure will be required, and the Contracting Authority may need to retain an element of demand risk. | Both the Contracting Authority and Private Partner should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project.<br>The Contracting Authority could undertake for the duration of the term of the project not to permit the construction or operation of any parallel railway infrastructure which would compete substantially with the Private Partner's passenger transport services. This undertaking could also extend to other competing modes of transport (eg buses or trolleybuses) developed within a certain radius of the route which would result in the avoidance of passenger fares which would otherwise be paid to the Private Partner. | There may need to be an element of subsidy from the Contracting Authority if demand falls below a certain amount. If this is structured as a "cap and collar" arrangement then the Contracting Authority should also start to benefit from economic upsides above the Private Partner's base case.<br>Some projects now ask bidders to price their subsidy needs, developing a hybrid demand risk/availability model.<br>If there is high uncertainty over passenger projections and uncertainty over revenues (due to tariff limitations and/or currency volatility) then the project may need to be structure purely on the basis of an availability fee. | Most demand risk light-rail projects in the world have over- estimated ridership and revenue forecasts, and restructurings have been common. This creates a difficulty for Contracting Authorities in emerging markets, particularly in the case of market first projects, where there is likely to be a lack of relevant comparative market data to begin with. |
| Maintenance | The risk of maintaining the asset to the | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate | The Contracting Authority should take time to ensure that the | Generally speaking, the Contracting Authority's | In developed markets, the involvement of the Private |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| risk | appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | | | | | standards regarding maintenance as set out in the output specifications defined by the Contracting Authority.<br>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 project model instances, work stemming from implementing technological or structural changes.<br>The Contracting Authority may retain the responsibility of performing certain soft services (e.g. cleaning, security, minor management services, etc.) where economical.<br>Note that on demand-risk projects, the Private Partner takes the primary risk that the system will be maintained to a sufficient level of quality and reliability to ensure that it can attract business. However where the system constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced farebox entitlements).<br>Where there is integration of the system into existing infrastructure, the Contracting Authority may need to retain the maintenance risk associated with some of the existing assets.<br>In a Dutch project, which is availability-based, the infrastructure is to be kept in accordance with the requirements as set out in the output specifications. The Private Partner also has to build the municipal infrastructure surrounding the tram infrastructure, but the maintenance of the municipal infrastructure is transferred on completion. Through deductions on the availability payable by the Contracting Authority to the Private Partner, the Contracting Authority can | output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement.<br>The primary role of the Contracting Authority is to properly define the output specifications and level of services required of the Private Partner.<br>Further, the Contracting Authority may establish a facilities management committee to oversee the Private Partner's performance of the maintenance and rehabilitation services, along with a formal mechanism to discuss and resolve performance related issues.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors. | undue interference with the Private Partner's provision of maintenance and rehabilitation services (with the exception of minor management services) reduces the benefits of the DBFOM project model.<br>The Contracting Authority may be required to guarantee and proactively manage the maintenance of the existing systems that integrate with the project. | Partner in the operation, maintenance and rehabilitation of the project provides several benefits by incentivizing greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | enforce maintenance requirements (e.g. if performance standards are not met). | | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have principal responsibility for maintaining the system to the appropriate standards set out in the output specification defined by the Contracting Authority.<br>Note that on demand-risk projects, the Private Partner takes the primary risk that the system will be maintained to a sufficient level of quality and reliability to ensure that it can attract business.<br>However, where the system constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced farebox entitlements).<br>Where there is integration of the system into existing infrastructure, the Contracting Authority may need to retain the maintenance or latent defect risk of some of the existing assets and fit for purpose standards appropriately adjusted. | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement.<br>Failure to get the output specification right for the project effectively transfers the risk back to the Contracting Authority. | The Contracting Authority may be required to guarantee and proactively manage the maintenance of the existing systems that integrate with the project. | Some projects in emerging markets have been procured on a D&B 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 system components and rolling stock to allow the operator to manage the ongoing maintenance risk. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) pressure waves caused by devices traveling at supersonic speeds; or (v) discovery of any species-at-risk, fossils, or historic or archaeological artefacts that require the project to be abandoned. In a Dutch project a disruption in the financial markets prior to Financial Close and natural disasters are also typically included as a force majeure event, while item (v) in the foregoing list is not.<br>Force majeure events occurring during | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On an availability based project, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties). | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, the Contracting Authority may be required to fully compensate the Private Partner for debt owed to the lenders. Whether the | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a "natural" force majeure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure will depend on whether the project is availability based (where relief from KPI penalties may be required) or is demand-based (where an element of fare subsidy may be required).<br>In a Dutch project, the occurrence of a force majeure event will obligate the Contracting Authority to pay compensation to the Private Partner. Additionally, if the force majeure event continues for more than 180 days the parties may decide to terminate the agreement. | | debt will be kept whole in such a scenario, will be a key area of focus for prospective lenders as part of their initial credit assessments. | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and you would expect to see a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (eg fire / flooding / storm, vandalism etc), and<br>- force majeure events which typically cannot be insured (eg strikes / protest, terror threats / hoaxes, suicide / accident, passenger emergency, collision / derailment, emergency services, trespass etc.)<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure will depend on whether the project is availability based (where relief | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>Force majeure events that do not cause physical damage and which are outside the<br>On an availability based project, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner would take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties).<br>Alternatively the project may be subject to abatement but excused from non-performance/breach. | See comments on the risk of uninsurability for a light rail project in emerging markets. | On emerging market transactions, the Contracting Authority often does not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | from KPI penalties may be required) or is demand-based (where an element of fare subsidy may be required). | | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Developed | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market.<br>In a Dutch project the Private Partner could also enter into new Financing Agreements (subject to certain conditions) and the Contracting Authority would also be able to request the Private Partner to investigate the possibilities for refinancing if the market in general is in a position to offer more favourable conditions. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks.<br>However in some circumstances the Contracting Authority may seek to retain interest rate risk if it feels it can bear the risk more efficiently than the private sector. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Emerging | | | X | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of fare adjustments, but the ability to do this may be limited as light rail projects tend to be highly demand elastic (i.e. fares go up and ridership goes down). | As fares will be collected in local currency the Contracting Authority may need to retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | In emerging market rail projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) and the parties | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | are unable to agree on suitable arrangements then the Private Partner may need an exit route (e.g. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis.<br>In a Dutch project, the Contracting Authority will also have the option to terminate the agreement and compensate the Private Partner in accordance with the compensation provided for force majeure. | | | priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the license and access to the system and surrounding lands necessary to allow the Private Partner to fulfil its obligations.<br>In a Dutch project this is generally not included in the agreement, other than the Contracting Authority having a general obligation to provide access to the site. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control (which will include ensuring that there are sufficient funds to meet any Contracting Authority payment obligations).<br>This concept may include any "material | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity potentially with a | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | adverse Government action" (broadly speaking any act or omission of any Government entity which has a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession) and may also include a specific list of events of a political nature such as expropriation, interference, general strikes, discriminatory changes in law, as well as more general uninsurable events such as risks of wars / riots / embargos etc.<br><br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | | Government guarantee. | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br><br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br><br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) Specific (to the rail sector or to PPP projects in the jurisdiction) or (iii) general change in law affecting capital expenditures. A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br><br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a Variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred.<br><br>In a Dutch project, there is no reference in relation to a requirement for an "impossible obligation" to allow a Variation.<br><br>The Private Partner will be entitled to a | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br><br>Change in law risk may also be mitigated where there is an ability to pass back changes in the tariff charged on the project. This is less commonly available on light rail projects which tend to be structured on an availability-payment basis rather than a traffic-risk/farebox basis.<br><br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress).<br><br>In a Dutch project, a Private | Past concession models (including that developed 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 SOPC 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 fares may be possible but given the high demand elasticity in the rail sector this may have a detrimental effect on ridership. | Projects in the rail sector involve a close interaction with passengers and safety regulation plays a paramount role. A change in health and safety legislation may well be of general effect but may have a disproportionate effect on the rail sector. For this reason some light rail projects have adapted the standard definitions of discriminatory/specific change in law to include any changes in law having such an effect. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | Variation due to a change in law in the event that the change in law is focused on the Private Partner (or similar contractors), requires an investment in capital (costs normally written of in more than 1 year) and results in an increase in costs over a specific threshold. | Partner can claim compensation regarding a change in law if the change takes effect on a date set a limited number of months prior to Financial Close and a contractor could not have reasonably foreseen that date. | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br><br>Change in taxation. | Emerging | X | | | The Contracting Authority typically bears principal responsibility for changes in law post-bid / post-contract signature.<br><br>There may be a degree of risk sharing with the Private Partner and there may be certain risks that the Private Partner is expected to bear alongside the remainder of the market.<br><br>The Private Partner would look to be kept whole in respect of changes of law which are discriminatory (towards the project or the Private Partner), or specific (to the light rail or transport sector).<br><br>The Private Partner may also receive protection against other (general) changes in law, however the level of protection will reflect the Private Partner's ability to mitigate this risk (through the tariff or inflation regime, if applicable) and whether the risk is of general application to the market (e.g. an increased tax on corporate tax or dividends across the board). It may also be appropriate for the Private Partner to bear a certain financial level of risk before compensation becomes payable, to ensure that claims are only made for material changes in circumstances.<br><br>Changes in law should always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation, or otherwise should give rise to a right to terminate (typically on a Contracting Authority default basis). | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br><br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br><br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | X | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority. | During the concession term, 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 | The payment mechanism may account for inflation costs by incorporating the consumer price index into the monthly payments. | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | On availability-based projects, during the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index.<br>Demand risk projects also need the ability to increase the fares, but this ability may often be restricted (as fare-raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | adjustment regime. | | |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risk is typically borne by the project user (on demand-risk projects) or the Contracting Authority (on availability-based projects).<br>On availability-based projects the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as staff and materials).<br>Demand risk projects also need the ability to increase the fares, but this ability may often be restricted (as fare-raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | 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. | The Contracting Authority may need to provide a subsidy to the Private Partner on demand risk projects if the user cannot bear the cost increase. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Any bid will be awarded on the basis of the Private Partner's technical expertise and financial resources and for this reason the sponsors of the Private Partner should remain involved in the project. | The Contracting Authority will limit the Private Partner's shareholder's ability to change their shareholding for a period (i.e. there is typically a lock-in for at least the construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>The tender documentation should set out proposals for any restrictions on the shareholders of the Private Partner. | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Any bid will be awarded on the basis of the Private Partner's technical expertise and financial resources and for this reason the sponsors of the Private Partner should remain involved in the project. | The Contracting Authority will limit the Private Partner's shareholder's ability to change their shareholding for a period (i.e. there is typically a lock-in for at least the construction period).<br>The tender documentation should set out proposals for any restrictions on the shareholders of the Private Partner. | | In emerging markets there is typically more restriction on any change of control in the Private Partner given the riskier nature of emerging market projects. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in the light rail sector. | Developed | X | | | This risk is unlikely to be passed to the Private Partner as technology is unlikely to be a major component of the project. | Obligation on the Private Partner to provide service which seeks for continuous improvement for minor changes. Obligation to operate in accordance with best industry practice may also impose some obligation on Private partner to take on improvements in technology.<br>Private Partner will also usually have an obligation to co-operate/ interface with any new fare collection system. | Major changes would require a variation. | Typically not dealt with in detail in developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in light rail sector. | Emerging | X | | | This risk is unlikely to be passed to the Private Partner as technology is unlikely to be a major component of the project. | Obligation on the Private Partner to provide service which seeks for continuous improvement for minor changes. Obligation to operate in accordance with best industry practice may also impose some obligation on Private partner to take on improvements in technology.<br>Private Partner will also usually have an obligation to co-operate/ interface with any new fare collection system. | Major changes would require a variation. | Typically not dealt with in detail in emerging markets. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner | Early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>In a Dutch project compensation will also typically be paid to Private Partner in case of termination due to a prolonged delay event. This will consist of senior debt, break costs, junior debt, equity and contract cancellation costs of outsourcing agreements or supply/consultant agreements.<br>It is common 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. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity; and | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority | In emerging markets, there may also be sovereign guarantees which support the Contracting Authorities payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | (3) Private Partner default – the Private Partner would typically get a payment that is a function of the input cost of the project (construction value / book value) or the outstanding senior debt.<br>In many emerging markets it is common 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. While it may seem that project lenders therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | defaulting on its payment obligations. |

# Risk Matrix 4: Heavy rail (ROT)

- Intercity rail developed as a rehabilitate, operate, transfer (ROT)
- Developed market project is based on the provision of rolling stock for use on the UK heavy rail network, in connection with a proposed infrastructure upgrade (the Edinburgh-Glasgow Improvement Programme)
- Emerging market is based on a concession to operate and manage rail assets and to provide freight services in Uganda and Kenya
- Key risks
  - Land purchase and site risk
  - Completion (including delay and cost overrun) risk
  - Maintenance risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | X | | | The UK heavy rail network is owned by Network Rail. The private sector Train Operating Company (Operator) is required to enter into a Track Access Contract with Network Rail in respect of the particular section of the Network on which it is permitted to operate services under its franchise agreement entered into between the Operator and the Contracting Authority.<br>The rolling stock manufacturer (Manufacturer) will be required to manufacture and supply rolling stock meeting the technical characteristics of the particular section of the Network. It will also be required to maintain the rolling stock at a specified depot.<br>The Manufacturer is responsible for providing maintenance, and therefore for ensuring that the specified depot is sufficient for this purpose. | The risk of delays to passenger services caused by the infrastructure being in poor condition is allocated under the Track Access Contract. Compensation is payable in specified circumstances if the track is not available when expected.<br>From the Manufacturer's perspective, the risk is mitigated by limiting its obligation to provide rolling stock which meets the Technical Requirements specified under the MSA, and which can be operated on (i.e. which meets the gauging and other technical requirements of) specified routes (usually set out in a Schedule to the MSA). | There is no direct Government support, except insofar as the UK Government provides a direct grant to Network Rail, and subsidises the agreed works programme of Network Rail. The Government also has a statutory duty to ensure the provision of railway passenger services on the UK rail network. | Unique to the UK's heavy rail market. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | X | | | The Contracting Authority bears the principal risk as the Private Partner is acquiring an interest in an existing railway.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference. | Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>The Contracting Authority may be required to provide additional site security / assistance during operations. | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of standards such as the IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. See comments on "Environmental and Social Risk" for an existing rail ROT project in emerging markets. |
| Environmental | The risk of the existing latent environmental | Developed | | | X | Network Rail will be expected to manage this risk (but may get force majeure | Network Rail would be expected to factor in environmental | None. | Environmental scrutiny is increasing even in developed |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| and social risk | conditions affecting the project and the subsequent risk of damage to the environment or local communities. | | | | | protection in certain circumstances)<br>The Manufacturer will usually take this risk, particularly in the context of Environmental Losses arising from maintenance activities. | considerations when planning its activities. | | markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Emerging | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced may need to be retained by the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | The Private Partner should have a comprehensive environmental and social plan in place which can be audited by project lenders and the Contracting Authority. | Government will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may need to be set out in the concession agreement. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | X | | | Network Rail is wholly responsible for infrastructure upgrades, as the party with knowledge of the UK heavy rail network. | Network Rail will seek approval from the relevant Contracting Authority in relation to any infrastructure upgrades contemplated.<br>The design of the rolling stock is the responsibility of the Manufacturer.  There will be a detailed design review process set out in the MSA. The Manufacturer will usually exclude liability for the risk of infrastructure upgrades being completed. | There is no direct Government support, except insofar as the UK Government provides a direct grant to Network Rail, and subsidises the agreed works programme of Network Rail.  The Government also has a statutory duty to ensure the provision of railway passenger services on the UK rail network. | In the UK's developed rail market, Network Rail has all historical information as to the maintenance of the rail infrastructure, rendering it difficult for other parties to take this risk. |
| Design risk | The risk that the project has not been designed adequately for the purpose required. | Emerging | | | X | The Contracting Authority may retain some design risk in certain aspects of the existing system or related works, depending on how prescriptive the Contracting Authority is in the output specification.<br>The Private Partner will warrant that it has satisfied itself in relation to the existing assets and their condition at commencement of the concession period. | The Contracting Authority may wish to consider how prescriptive it should be in the output specification.<br>The Contracting Authority must provide reasonable access and opportunity for the Private Partner to survey condition of the existing assets. | The Contracting Authority may be required to guarantee and proactively manage the maintenance of the existing systems that integrate with the project. | Emerging market rail projects may be particularly dependent on availability of reliable traction power or fuel availability, which have implications for the Private Partner's ability to meet the reliability requirements in the output specification. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| **Category** | **Description** | **Variable** | **Public** | **Private** | **Shared** | **Rationale** | **Measures** | **Issues** | **Market Comparison Summary** |
| | | | | | | The Private Partner's ability to warrant the fitness for purpose of its design solution for rehabilitation works may be impacted by the condition of the existing assets, and the Contracting Authority will to that extent share in the design risk. | | | |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | | | No standard position.<br>In the case of rolling stock procurement, labour disputes may attract force majeure protection.<br>Project management obligations are imposed on each party.<br>Commissioning damage will be the Manufacturer's risk unless it occurs during testing carried out by the Operator or a third party.<br>MSAs contain detailed IP right provisions. Source Codes are usually placed into escrow on the terms of an industry standard contract, to be released on the occurrence of specified events such as Manufacturer insolvency.<br>Quality assurance standards are dealt with in the Manufacturer's obligation to supply rolling stock meeting a detailed technical specification and complying with applicable law and standards.<br>The Manufacturer takes the risk of defective materials, and latent defects (although these may be excluded in favour of a bespoke warranty regime).<br>The Manufacturer takes the risk of subcontractor disputes / insolvency.<br>The Manufacturer takes the risk of cost overruns unless a Mandatory Modification is required or a Variation is negotiated. | Varied.<br>Commissioning damage will be mitigated by insurance.<br>The other risks are the subject of negotiation between the parties. | Varied. | Varied. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance | Emerging | | | X | Private Partner assumes project management risk in rehabilitation/extension works where they are dependent on or integrated with Contracting Authority work/related infrastructure work.<br>Private Partner takes labour dispute risk unless political. | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing | Some emerging market rail projects 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 |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | | | | | Private Partner takes risk of IP right infringement.<br>Private Partner required to construct to GIP standards.<br>Private Partner takes risk of cost overrun on rehabilitation or extension works where no compensation/relief event applies.<br>The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, and the ongoing costs of financing the works.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of rolling stock, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected demonstrate adequate system performance before it is given the permit to operate the system. Existing rail ROT projects require complex commissioning and testing regimes given the intricacies involved in ensuring that the rolling stock, power systems, signalling systems, operations centre and the wider system will meet the necessary reliability and punctuality requirements of the Output Specification. | that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | an emerging market context the dynamics may be different if the lenders have a significant underwrite of their senior debt.<br>Late completion of rehabilitation or service extension works are most often addressed as lost opportunity for revenue by the Private Partner. There may also be a longstop date for completion. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | | X | Network Rail retains responsibility for the infrastructure and infrastructure upgrades.<br>The Manufacturer is responsible for delivery of the rolling stock in accordance with a specified timetable. | Network Rail's performance is scrutinised by ORR which enforces its Network Licence.<br>The Manufacturer is liable to pay liquidated damages for late delivery of rolling stock, usually to both the Operator and the rolling stock owner. | There is no direct Government support, except insofar as the UK Government provides a direct grant to Network Rail, and subsidises the agreed works programme of Network Rail. The Government also has a statutory duty to ensure | In relation to the infrastructure in the UK's developed rail market, Network Rail remains the party with the experience, resources and asset knowledge to take this risk. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | | the provision of railway passenger services on the UK rail network. | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the rehabilitation or extension works on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk associated with bringing rehabilitated services back in to operations, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs. In some instances where the railway is taken over as a going concern the Private Partner's right to increase tariffs will not arise unless the new or upgraded works have been completed.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of rolling stock, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts. | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed concession period for operation, or (ii) the scheduled construction period forming part of the fixed concession period (with extensions for certain events such as force majeure). With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose delay liquidated damages on the Private Partner. However this decision should always be assessed against the likelihood that genuine out-of pocket costs will actually be incurred for such delay, so as to avoid unnecessary contingency being built into the project (which then increases the 'price'). |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | | X | In relation to infrastructure, this risk is taken by Network Rail alone.<br>The Manufacturer takes the entire risk of its own performance, subject to certain "Permitted Delay" events under the MSA, relating to matters outside its control. | The ORR monitors performance by Network Rail and enforces its Network Licence. It can impose monetary penalties. | No direct Government support. | In the UK's developed market, Network Rail is best placed to manage this risk, given its experience and resources.<br>Private sector manufacturers would expect to take this risk in relation to the supply of rolling stock, and have the skills and experience to do so. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Emerging | | X | | The Private Partner bears the risk of meeting the performance specification.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | In projects expecting extremely high demand, it may be difficult to achieve a meaningful punctuality / headway metric; it may be more appropriate to focus on requiring the Private Partner to provide a volume driven output service.<br>The Private Partner may need to require the Contracting Authority to reduce the performance requirements during the settling in period and possibly readjust the performance metrics once the performance of the system has settled down. This would mitigate the risk of long-term performance failure. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | For emerging 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. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | | X | Network Rail takes the risk in relation to any required infrastructure upgrades.<br>The Manufacturer takes the entire risk of its own performance, subject to certain “Permitted Delay” events under the MSA, relating to matters outside its control. | The ORR monitors performance by Network Rail and enforces its Network Licence. It can impose monetary penalties. | No direct Government support. | In the UK’s developed market, Network Rail is best placed to manage this risk, given its experience and resources.<br>Private sector manufacturers would expect to take this risk in relation to the supply of rolling stock, and have the skills and experience to do so. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as availability of energy supply, or reliance on local source materials where these may be affected by labour disputes, embargos or other political risks.<br>Time and cost risk is normally passed on to contractors. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of tariff adjustments, but the ability to do this may be limited.<br>Lenders may look to sponsors for completion support. | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner’s financing for these costs. | Emerging markets are generally more susceptible to market volatility and major cost variations. See comment on exchange rate for an existing rail ROT project in emerging markets. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a | Developed | | | X | Under a typical franchise agreement, this risk will largely be taken by the Operator but will be mitigated by the revenue share obligations imposed on the Operator and revenue support obligations imposed on | Under a typical franchise agreement, the Operator will be required to share a proportion of its revenue exceeding a specified threshold with the | If the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable ridership and |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | project or the demand for the product of service of a project by consumers/users | | | | | the Contracting Authority.<br>Alternatively the Contracting Authority may decide to take this risk, in which case it will require the Operator to enter into a management contract. | Contracting Authority, and will be entitled to receive revenue support from the Contracting Authority if its revenue is below a specified threshold. Revenue share arrangements do not normally apply during the first 4 years of a franchise agreement. | politically and economically) with demand forecasts. | revenue forecasts, such that the Contracting Authority is well placed to manage demand and farebox risk. However, within certain parameters, the Contracting Authority may feel that the Operator should take a degree of this risk. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Emerging | | X | | The default position for existing rail ROT projects in emerging markets is for the Private Partner to retain demand and tariff risk (risk of demand and total revenue receipt).<br>To the extent that tariff revenue may be insufficient to cover the cost of financing and operating the project in question, as well as meeting the likely project contingencies, then some form of taxation-based support within the payment structure will be required, and the Contracting Authority may need to retain an element of demand risk. | Both the Contracting Authority and Private Partner should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy to deal with the implementation of the project. | There may need to be an element of subsidy from the Contracting Authority if demand falls below a certain amount. If this is structured as a “cap and collar” arrangement then the Contracting Authority should also start to benefit from economic upsides above the Private Partner’s base case. This is not universally included and does not necessarily reflect a market practice.<br>If there is high uncertainty over passenger projections and uncertainty over revenues (due to tariff limitations and/or currency volatility) then the project may need to be structure purely on the basis of an availability fee. | Most demand risk rail projects in the world have over-estimated user and revenue forecasts, and restructurings have been common. This creates a difficulty for Contracting Authorities in emerging markets, particularly in the case of market first projects, where there is likely to be a lack of relevant comparative market data to begin with. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Developed | | | X | Network Rail owns and is responsible for maintaining the UK heavy rail network. It has built up years of experience and expertise and is therefore best placed to manage this risk.<br>Some years ago, maintenance of the track was sub-contracted to private sector entities. This was not successful, as it resulted in increased costs and variable quality. Network Rail took responsibility for track maintenance back in-house.<br>Maintenance of the rolling stock is undertaken by the Manufacturer, under its | The risk of delays to passenger services caused by the infrastructure being in poor condition are allocated under the Track Access Contract. Compensation is payable in specified circumstances if the track is not available when expected.<br>In addition, Network Rail is required to hold a network licence granted by the Office of Rail and Road (ORR), the UK’s | There is no direct Government support, except insofar as the UK Government provides a direct grant to Network Rail, and subsidises the agreed works programme of Network Rail. The Government also has a statutory duty to ensure the provision of railway passenger services on the UK rail network. | Unique to the UK’s heavy rail market. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | contract with the Operator. | independent rail regulator. This licensing regime requires Network Rail to comply with certain safety standards, to maintain the rail network and to seek to improve performance and efficiency. The ORR monitors Network Rail's performance on a continuous basis - against targets in the most recent access charges review, against obligations in its network licence and against forecasts in its own business plan. Where necessary, the ORR may enforce compliance with the network licence if Network Rail fails to fulfil its obligations, and the ORR may also impose monetary penalties.<br>The licence also rewards Network Rail for meeting and exceeding targets.<br>The volume of services operated on the infrastructure, and thus the wear and tear imposed on the infrastructure is limited to an extent by the control exercised by the Contracting Authority under each Franchise Agreement over the number of services that can be operated. | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have principal responsibility for maintaining the system to the appropriate standards set out in the output specification defined by the Contracting Authority.<br>Note that on demand-risk projects, the Private Partner takes the primary risk that the system will be maintained to a sufficient level of quality and reliability to ensure that it can attract business. However where the system constitutes an essential public service or effective monopoly operation over that route, it would be sensible for the Contracting Authority to include appropriate KPIs to monitor the service levels and take | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement. If the Contracting Authority fails to get the output specification right then it effectively transfers risk back to itself. | The Contracting Authority may be required to guarantee and proactively manage the maintenance of the existing systems that integrate with the project. | Some projects in emerging markets have been procured on a Rehabilitation-Operate-Transfer basis. In this case the Contracting Authority will need to ensure that it has sufficient warranties of the system components and rolling stock to allow it to manage any maintenance risk which transfers back to the Contracting Authority at the end of the concession. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | effective enforcement action (e.g. through penalties or reduced tariff entitlements).<br>Where there is integration of the system into existing infrastructure, the Contracting Authority may need to retain the maintenance risk of some of the existing assets. | | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Network Rail may seek force majeure relief on specific projects, for defined force majeure events such as (a) war, terrorism, (b) acts of vandalism or accidental damage or destruction of machinery, equipment, track or other infrastructure; (c) natural disasters; (d) nuclear, chemical or biological contamination; (e) pressure waves caused by devices travelling at supersonic speeds; (f) discovery of fossils, antiquities or unexploded bombs; and/or (g) strike or other industrial action other than involving the contract counterparty or Network Rail.<br>The Manufacturer will seek comparable force majeure relief and will also usually seek to cover strikes, lock-outs or other labour disputes where these are nationwide or rail industry-wide events. | Insurance is the expected mitigant.<br>An MSA will usually terminate after a force majeure event has been in place for a specified period (e.g. one year). | None. | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and you would expect to see a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (eg fire / flooding / storm, vandalism etc), and<br>- force majeure events which typically cannot be insured (eg strikes / protest, terror threats / hoaxes, suicide / accident, passenger emergency, collision / derailment, emergency services, trespass etc.)<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>Force majeure events that do not cause physical damage and which are outside the scope of the business interruption insurance will cause a cash flow issue for the Private Partner. The Contracting Authority may therefore grant the Private Partner certain royalty reliefs to allow the Private Partner to prioritise its debt service obligations. This relief could be provided by way of a low-interest "loan", such that when revenues restart and exceed a certain threshold above debt service, | See comments on the risk of uninsurability for an existing rail ROT project in emerging markets. | On emerging market transactions, the Contracting Authority often does not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure will depend on whether the project is availability based (where relief from KPI penalties may be required) or is demand-based (where an element of Government subsidy may be required). | the Contracting Authority would be repaid the "lost" royalty payments. | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Developed | | | X | Network Rail takes interest rate risk but exchange rate risk should not apply. Network Rail receives its Government funding in 5 year blocks called control periods.<br>Manufacturers take interest rate risk (they may seek to enter into hedging arrangements). They may seek to avoid exchange rate risk either side of a specified contract date, but Manufacturers usually accept this as a business risk. | Exchange and interest rates risks are typically not addressed directly. | The Contracting Authority is not expected to assist Network Rail or the Manufacturer in mitigating such risks. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and/or the interest rate over the life of a project. | Emerging | | | X | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility. | Some of the cost risk can be managed on demand-risk projects by passing the risk through to the user by way of tariff adjustments, but the ability to do this may be limited as existing rail ROT projects tend to be highly demand elastic (i.e. tariffs go up and demand goes down). | As tariffs will be collected in local currency the Contracting Authority may need to retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | In emerging market rail projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Network Rail is required to take out specified insurance cover under the terms of its Network Licence.<br>The Manufacturer will be required to take out specified levels of insurance under the MSA and any maintenance contract, to include all risks property insurance, employers' liability insurance, and third party public and product liability insurance. Failure to insure will typically be an event of default. | Network Rail's Network Licence is enforced by ORR. | None. | In developed market transactions in the heavy rail sector, each party usually takes the risk of its own insurance. |
| Insurance risk | The risk that insurance | Emerging | | | X | Where risks become uninsurable there is | The Contracting Authority and | The Contracting Authority | On emerging market |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | for particular risks is or becomes unavailable. | | | | | typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable and if Contracting Authority wishes for the Private Partner to continue with the project. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | X | | | Under an MSA, requisition will normally be a force majeure event. | A Permitted Delay may be granted to the Manufacturer where a stop order is imposed by a Contracting Authority e.g. in response to an accident. | None. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control.<br>This concept may include any "material adverse Government action" (broadly speaking any act or omission of any Government entity which has a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession) and may also include a specific list of events of a political nature such as expropriation, interference, general strikes, discriminatory changes in law as well as more general uninsurable events such as risks of wars / riots / embargos etc.<br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity potentially with a Government guarantee. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price | Developed | | | X | Network Rail is likely to seek change in law protection for specified events.<br>Similarly, a manufacturer will seek change in law protection, and the parties will | None. | None. | Projects in the rail sector involve a close interaction with passengers and safety regulation plays a paramount |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | at which compliance with law can be maintained.<br>Change in taxation. | | | | | usually seek to agree a list of Foreseeable changes in law for which no protection is available. | | | role. A change in health and safety legislation may well be of general effect but may have a disproportionate effect on the rail sector. The parties are expected to comply with foreseeable changes in law. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | X | | | The Contracting Authority typically bears principal responsibility for changes in law post-bid / post-contract signature.<br>There may be a degree of risk sharing with the Private Partner and there may be certain risks that the Private Partner is expected to bear alongside the remainder of the market.<br>The Private Partner would look to be kept whole in respect of changes of law which are discriminatory (towards the project or the Private Partner), or specific (to the rail or transport sector).<br>The Private Partner may also receive protection against other (general) changes in law, however the level of protection will reflect the Private Partner's ability to mitigate this risk (through the tariff or inflation regime, if applicable) and whether the risk is of general application to the market (e.g. an increased tax on corporate tax or dividends across the board). It may also be appropriate for the Private Partner to bear a certain financial level of risk before compensation becomes payable, to ensure that claims are only made for material changes in circumstances.<br>Changes in law should always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation, or otherwise should give rise to a right to terminate (typically on a Contracting Authority default basis). | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | | X | This risk is taken by Network Rail in relation to infrastructure.<br>This risk is taken by the Manufacturer in relation to rolling stock, subject to a regime relating to Variations for Mandatory Modifications. | None, save for indexation. | None. | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | Rolling stock maintenance costs are usually subject to indexation. | | | |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risk is typically borne by the project user (on demand-risk projects) or the Contracting Authority (on availability-based projects).<br>Rail ROT projects in emerging markets are typically demand risk projects which need the ability to increase the user tariff, but this ability may often be restricted (as costs raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support.<br>On availability-based projects the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as staff and materials). | 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. | The Contracting Authority may need to provide a subsidy to the Private Partner on demand risk projects if the user cannot bear the cost increase. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | The importance of these risks varies from transaction to transaction. In a highly regulated market like UK the participants are major corporates not SPVs so there is less of a focus on change in control. | Varied. | Varied. | Varied. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is and has the specialist input needed to make the project a success.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for initial concession period).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | Contracting Authority in emerging markets is not likely to be more restrictive. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in existing rail ROT sector. | Developed | | | | Not usually addressed as unlikely to be considered a 'thread' to the infrastructure. Technological change will mostly reduce cost and increase efficiency. | | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces | Emerging | X | | | This risk is unlikely to be passed to the Private Partner in an emerging markets ROT project where technology is unlikely | Obligation on Private Partner to provide service which seeks for continuous improvement for | Major changes would require a variation. | Typically not dealt with as unlikely in emerging markets. |

| Risks<br>Category | Description | Variable | Allocation<br>Public | Private | Shared | Rationale | Mitigation<br>Measures | Government Support Arrangements<br>Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | an established technology used in existing rail ROT sector. | | | | | to be a major component of the project. | minor changes. | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | In the UK heavy rail sector, the position is less standardised than on typical PPP projects.<br>A Manufacturer may grant the Owner the right, at its option to elect to take the benefit of work carried out by the Manufacturer prior to termination, at a fair price reflecting instalments of the contract price already paid. Alternatively, the Owner may usually require the Manufacturer to refund the contract price paid, with interest. The Owner may seek to negotiate a right to hand back the entire accepted fleet of rolling stock if the number of rolling stock then accepted is below a specified threshold. On a termination, the Manufacturer will usually be required to indemnify the Owner and Operator against certain costs such as the costs of procuring a replacement contract, less or revenue as a result of owning a smaller fleet and certain other direct losses. | A key mitigant is to make sure the termination triggers are not hair triggers and that there is scope, where possible, for each party to remedy any alleged default. | In certain circumstances, the Contracting Authority may require a direct agreement in relation to a maintenance contract. It will invariably require a direct agreement in relation to any rolling stock lease, preventing the Owner from terminating without giving the Contracting Authority certain step in rights, designed to enable the Contracting Authority to perform its statutory duty to provide railway passenger services. | Early termination compensation is reasonably well defined and political risk insurance is not typically. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for :<br>(1) Contracting Authority default – the Private Partner would get senior debt (to the extent applicable), equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt (to the extent applicable) and equity; and<br>(3) Private Partner default – the Private Partner would typically get a payment that is a function of the input cost of the project (construction value / book value) or the outstanding senior debt (if appropriate).<br>In many emerging markets it is common for the senior debt to be guaranteed as a | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default.<br>The mitigation for the lenders where the level of compensation is less than senior debt is the level of equity in the deal and possibly sponsor guarantees , such as completion guarantees to cover the key risk of default before a steady state service is established. | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to | In emerging markets, there may also be sovereign guarantees which support the Contracting Authorities payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | minimum in every termination scenario, and for rights of set-off below that figure to be restricted but this level of coverage is by no means universal and there are projects where the Private Partner and its lenders will retain the risk of a shortfall in asset valuation on an early termination.<br>While it may seem that project lenders therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | |

# Risk Matrix 5: Port (DBFO)

- A new container terminal port project, developed as a DBFO transaction
- Emerging market is based on a concession in Senegal
- Key risks
  - Environmental and social risk
  - Demand risk
  - Force majeure risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | | X | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>That said, there may be some areas where risk will be shared with the Private Partner. Whilst the Contracting Authority may be able to secure the availability of the corridor, the suitability of the corridor may be dependent on the Private Partner's design and construction plan.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination. Existing assets proposed to be used in the project should also be fully surveyed and warranted.<br>The Contracting Authority will normally hand over the site to the Private Partner in an "as-is" condition. The Private Partner may take the risk for dealing with adverse conditions revealed by surveys regarding unforeseeable subsoil risks.<br>Where it is not possible to fully survey prior to award risk will be allocated to Contracting Authority or shared. | The Contracting Authority should undertake detailed ground, marine, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process. Such assessment should consider any easements and covenants, etc. that may encumber the land<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects.<br>Channel dredging. | Emerging | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed and warranted. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to be held by the Contracting Authority.<br>On brownfield port projects the Contracting Authority may take the risk in all or part of the existing port infrastructure handed over to the Private Partner prior to commencement of any expansion to ensure a certain minimum standard is achieved.<br>Over the term of the concession the Contracting Authority may be required to continue to provide supporting infrastructure work such as ensuring that the channels are dredged and maintained at the required depth and that connecting roads, railways and utilities continue to be provided. | The Contracting Authority should undertake detailed ground, marine, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties to raise claims on the land. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site.<br>The Contracting Authority may be required to provide additional site security / assistance during operations to manage this risk. | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Developed | | X | | The Private Partner will have primary responsibility to accept the project site in an "as is" condition, subject to Contracting Authority's disclosure of relevant matters, and manage the environmental and social strategy across the project, as well as obtaining all required licenses, permits and authorizations as necessary.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |

| Risks: Category | Description | Variable | Allocation: Public | Private | Shared | Rationale | Mitigation: Measures | Government Support Arrangements: Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Contracting Authority.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | Lenders will expect to see a plan to see how these aspects are dealt with and that these comply with the Equator Principles (if applicable to the project).<br>Certain investors, such as DFIs, will have their own requirements for environmental and social plans. In particular in relation to noise pollution and will require that these are provisions in agreements that will lead to remediation or mitigation.<br>Environmental risk extends to the impact of the wider project including issues such as the location in which dredging spoil is to be dumped and the wider impact of the project on marine life and wildlife. Projects in the United Kingdom and Australia have faced substantial opposition and costs in addressing and mitigating these risks. | | |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Emerging | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced may need to be retained by the Contracting Authority.<br>The Contracting Authority may also need to retain responsibility for social impacts which are unavoidable from the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of rural or urban communities / businesses). | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project.<br>Lenders will expect to see a plan to see how these aspects are dealt with and that these comply with the Equator Principles (if applicable to the project).<br>Certain investors, such as DFIs, will have their own requirements for environmental and social | Government will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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.<br>In particular on emerging market port projects the impact on local subsistence fishing communities will need to be managed by the Contracting Authority. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | plans. In particular in relation to noise pollution and will require that these are provisions in agreements that will lead to remediation or mitigation.<br>Environmental risk extends to the impact of the wider project including issues such as the location in which dredging spoil is to be dumped and the wider impact of the project on marine life and wildlife. Projects in the United Kingdom and Australia have faced substantial opposition and costs in addressing and mitigating these risks. | | |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the output / performance specification.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the output specification.<br>If the output 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.<br>If the project is being integrated into existing infrastructure, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted (in that it will not be able to warrant defects in the existing infrastructure that may impact performance). | The Contracting Authority will often broadly draft the Private Partner's design and construction obligations to satisfy the output specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the design.<br>A design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner, however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability. | | Developed market port projects benefit from stable resource availability and defined design standards which allow for increased innovation and productivity gains. The quality of the information provided by the Contracting Authority and limited ability to verify such data can also hinder the Private Partner's ability to unconditionally take full design risk. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the port infrastructure. | Since the Private Partner is usually taking the majority of the economic risk on the project, the Private Partner would wish to limit the rights of the Contracting Authority to object to the proposed design or any changes | | Where the projects are proposed by Private Partners on an unsolicited basis there is likely to be little input from the Contracting Authority in the design of the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | Approval of designs.<br>Changes to design. | | | | | | to it when these would materially change the long-term interests of the Contracting Authority when the infrastructure is returned. | | However where there is existing port infrastructure, competing ports in the same country or where the port is being procured for a particular industry (eg oil and gas terminals) the Contracting Authority may have more interest in defining the output specification. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award.).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time.<br>The Contracting Authority may seek to enter into direct IP arrangements with the designer/manufacturer to ensure it retains necessary IP rights in the event of Private partner IP infringement. | In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |
| Construction risk | Labour dispute. Interface/project management. | Emerging | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the | The Contracting Authority may have a critical role to play at stages of the construction, testing and | In an emerging market context the dynamics may be different if the lenders have a significant |

| Risks<br>Category | Description | Variable | Allocation<br>Public | Private | Shared | Rationale | Mitigation<br>Measures | Government Support Arrangements<br>Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation / relief event applies. | | | | | completed in which case risk could be shared (see comments on supporting infrastructure obligations).<br>The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide.<br>The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay.<br>The Private Partner takes the risk of IP right infringement.<br>The Private Partner is required to design and construct to good industry practice standards (including the ISPS Code) and may be required to comply with or develop other quality assurance programmes or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award.).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | underwrite of their senior debt.<br>Late completion is most often addressed as lost opportunity for revenue by the Private Partner.<br>There will also be a longstop date for completion. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction, holding costs of other contractors and extended site costs.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of rolling stock, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for | The Contracting Authority may wish to implement a multi-staged completion process to ensure the Private Partner begins receiving payment for its design and construction services once significant components of the project are substantially completed. This can help increase cash flow during construction, reduce the Private Partner's financing costs and incentivize the phasing of construction works in order to ensure critical components are completed on time. Financial penalties and liquidated | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays or | In developed markets, enforcement of construction deadlines and budgets may be easier as the Private Partner will typically have more experience and reliable resources. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected to demonstrate adequate system performance before it is given permission to operate the system. | damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>The Contracting Authority may also consider the inclusion of a look forward test to trigger a default if an independent party certifies that completion will not be achieved by the longstop date. | cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>A key integration risk on port projects is the procurement and installation of cranes and other goods handling machinery. These may be provided by an operator or through long term leasing arrangements and may sit outside the EPC contractor's scope. | It may be difficult for the Private Partner to mitigate these integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this.  Ensuring that the programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue necessary consents in good time. | An additional concern for the Private Partner to manage in the context of delays will be whether the Private Partner will breach any minimum throughput guarantee owed to the Contracting Authority (see performance risk section). |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or | Developed | | X | | The Private Partner bears the risk of meeting the performance specification.<br>However, the Contracting Authority is responsible for enforcing the regime and | | Where certain performance indicators cannot be met due to actions by the | In developed markets, the Contracting Authority should have access to various data sources to develop realistic |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion.<br>Supporting infrastructure.<br>Marine services.<br>Throughput guarantees. | | | | | for ensuring that the output specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels, and the appropriateness of metrics given the nature of the project. | | Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | and attainable performance specifications and models. |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and Safety Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion.<br>Supporting infrastructure.<br>Marine Services.<br>Throughput guarantees. | Emerging | | X | | The Private Partner bears the risk of meeting the performance specification and any throughput guarantees it provides.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. In particular Private Partners typically want freedom in how they operate the port.<br>In emerging markets the surrounding hinterland infrastructure (road and rail networks) required to support the project is of particular importance to the Private Partner and will be a retained Contracting Authority risk to the extent that it impacts on the successful implementation of the project.<br>A failure by the Contracting Authority to upgrade and maintain the supporting infrastructure in a manner which enables it to deal with any increased traffic from the port will impact on the Private Partner's ability to process throughput at the port | The Private Partner may be able to enter into service level agreements with the relevant Government entities which will be providing the required Governmental services at the port.<br>A failure by the relevant Government entity to comply with these service level agreements should entitle the Private Partner to relief under the port concession.<br>The Contracting Authority may also set key performance indicators (eg in relation to the gross number of crane movements per hour or set conservation periods for full, empty or transhipment containers) in relation to the operation of the port. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation.<br>The Contracting Authority may be required to upgrade the road or rail network servicing the port. | In emerging markets the Contracting Authority's ability to provide the appropriate infrastructure support upgrades presents a particular challenge.<br>In addition where there the project is in competition with an existing port operated by the port authority there may be issues in the level of service provided to the project by the port authority which would need to be addressed in the project documents. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | and will adversely affect berthing times and the efficiency of the project.<br>Likewise the inability of the Contracting Authority to provide or procure the provision of the required marine services (pilotage, towage, port traffic control) which form the exclusive domain of the port authority will impact on the Private Partner's ability to perform.<br>Finally the Contracting Authority is required to ensure the efficient provision of the necessary customs control, immigration control and quarantine (human and animal) functions at the port. | | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs. | The Contracting Authority will be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary.<br>The Private Partner may be incentivized, through a sharing mechanism, to increase efficiencies in energy consumption throughout the concession period. | Monthly payments to the Private Partner may include certain calculations that could alleviate uncontrollable cost increases due to increases in energy costs that would otherwise be borne by the Private Partner. | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern, however energy costs may still vary significantly over the course of project that must be accounted for. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as availability of energy supply, or reliance on local source materials where these may be affected by labour disputes, embargos or other political risks.<br>Time and cost risks are normally passed on to contractors. | | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner's financing for these costs. | Emerging markets are generally more susceptible to market volatility and major cost variations. |
| Demand risk | The availability by both volume and quality along with transportation of | Developed | | X | | | | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | resource or inputs to a project or the demand for the product of service of a project by consumers/users | | | | | | | | |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Emerging | | X | | In emerging markets the Private Partner typically takes the full demand risk on port projects.<br>On certain robust projects the Private Partner may also need to give minimum throughput guarantees in relation to the number of TEUs processed per month. | The Contracting Authority's inefficient provision of marine services, insufficient maritime infrastructure maintenance or insufficient channel dredging may impact on the port users' demand for the project.<br>Accordingly it is common for Contracting Authorities to be required to guarantee certain levels of protection against competing ports (within a particular distance or time envelope) and to guarantee the punctual and adequate provision of certain supporting services. | Competition from competing port facilities in-country (whether new or existing) is a major risk.<br>See guarantees referred under "mitigation". | In particularly robust emerging market projects the Private Partner may need to provide a minimum throughput guarantee subject to compliance by the Contracting Authority with its maintenance and supporting infrastructure obligations. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set out in the output specifications defined by the Contracting Authority.<br>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 project model instances, work stemming from implementing technological or structural changes.<br>The Contracting Authority may retain the responsibility of performing certain soft services (e.g. cleaning, security, minor management services, etc.) where economical. | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement. There will be requirements that will need to be met by the Private Partner on hand back and a reserve account or bonding may be required to be provided by the Private Partner as security for its obligations.<br>The primary role of the Contracting Authority is to properly define the output specifications and level of services required of the Private Partner.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers | | In developed markets, the involvement of the Private Partner in the operation, maintenance and rehabilitation of the project provides several benefits by incentivizing greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors. | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns.<br>Maintenance of surrounding non-project maritime infrastructure.<br>Maintenance dredging. | Emerging | | | X | The Private Partner will have principal responsibility for maintaining the port infrastructure to the appropriate standards set out in the output specification defined by the Contracting Authority.<br>Where there is integration of the system into existing infrastructure, the Contracting Authority may need to retain the maintenance or latent defect risk of some of the existing assets and fit for purpose standards appropriately adjusted.<br>The Contracting Authority however will often be responsible for maintaining the access channels (including maintenance dredging), turning circle and docking zones.<br>The Contracting Authority will also usually be responsible for maintaining the related equipment used in the provision of marine services (and procuring replacement or additional equipment where required). | The Contracting Authority should take time to ensure that the output specification properly defines the handback obligations on the Private Partner to ensure that the port infrastructure remains robust in the event of early termination or expiry of the agreement.<br>Failure to get the output specification right for the project effectively transfers the maintenance risk back to the Contracting Authority.<br>The Contracting Authority should ensure that the port authority is capable of fulfilling its maintenance obligations (ie by ensuring it has adequate funds and capacity to do so). | The Contracting Authority may be required to guarantee and proactively manage the maintenance of the existing maritime infrastructure that integrates with the project. | In emerging market port projects there is typically a greater focus on the obligations of the Contracting Authority in relation to the upgrade and continued maintenance of the supporting hinterland infrastructure as well as on the port authority's ability to provide the marine services and maintain the related maritime infrastructure.<br>Failure by the Contracting Authority to do so will impact on the efficiency of the port (especially in relation to vessel berth and cargo dwell times) and will ultimately impact on the Private Partner's ability to effectively implement the project.<br>In emerging markets inefficient port operation impacts the competitiveness of the project and is a major concern for Private Partners.<br>Improving efficiency can lower total transaction costs and will boost the competitiveness of a project. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) pressure waves | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>The risk of disruption as a result of no-fault events could be mitigated by relaxing the | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, after a number of months of continuous force majeure either party should be | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | caused by devices traveling at supersonic speeds; or (v) discovery of any species-at-risk, fossils, or historic or archaeological artefacts that require the project to be abandoned.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure may require relief from KPI penalties or an element of temporary reduction or suspension of concession fee payments may be required. | performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties).<br>If the effect of the force majeure event is to reduce the revenues of the Private Partner then the amount of the variable concession fee should be rateably reduced. However, it will be a matter of negotiation as to whether any fixed concession fee should continue to be payable in full. | entitled to terminate the concession contract. If the Contracting Authority does not want the concession contract to be terminated then the Contracting Authority shall pay the Private Partner the actual additional cost of continued operating and an amount of compensation in order to service the Private Partner's debt obligations during the course of the event.<br>Whether the debt can be fully serviced in such a scenario prior to the possible time for termination, will be a key area of focus for prospective lenders as part of their initial credit assessments.<br>Where the project is terminated by either party, the Contracting Authority will normally be required to compensate the Private Partner fully for debt owed to the lenders. | "natural" force majeure. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and you would expect to see a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (eg fire / flooding / storm etc), and<br>- force majeure events which typically cannot be insured (eg strikes / protest / epidemics) | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. | Termination payment for prolonged force majeure may differ depending on the type of force majeure. Lenders will expect to see debt covered by Contracting Authority and/or insurance payments. | In emerging markets, some projects do not provide any protection for natural force majeure events, even if insured leaving lenders exposed to termination. |

| **Risks** | | | **Allocation** | | | | **Mitigation** | **Government Support Arrangements** | |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | **Market Comparison Summary** |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks.<br>However in some circumstances the Contracting Authority may seek to retain interest rate risk if it feels it can bear the risk more efficiently than the private sector. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Emerging | | | X | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility. | Some of the cost risk can be managed by passing the risk through to the port users by way of adjustments to the tariff, but the ability to do this may be limited.<br>It is therefore common for the Private Partner to look for the right to charge the port tariffs in USD or other hard currency rather than local currency. | As revenue may be collected in local currency the Contracting Authority may need to retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt) or alternatively provide the necessary dispensations/ approvals to allow tariffs and project accounts to be denominated in hard currency. | In emerging market port projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances or an act or threat of terrorism. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | to obtain any relevant insurance.<br>If the cost of insurance increases above specified amounts this increased cost may be shared by the parties.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | | | percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the license and access to the system and surrounding lands necessary to allow the Private Partner to fulfil its obligations. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control (which will include ensuring that there are sufficient funds to meet any Contracting Authority payment obligations).<br>This concept may include any "material adverse Government action" (broadly speaking any act or omission of any | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity potentially with a Government guarantee. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |

| Risks<br>Category | Description | Variable | Allocation<br>Public | Private | Shared | Rationale | Mitigation<br>Measures | Government Support Arrangements<br>Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Government entity which has a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession) and may also include a specific list of events of a political nature such as expropriation, interference, general strikes, discriminatory changes in law, as well as more general uninsurable events such as risks of wars / riots / embargos etc.<br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) Specific (to the port sector or to PPP projects in the jurisdiction) or (iii) general change in law affecting capital expenditures. A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a Variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred. | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Change in law risk may also be mitigated where there is an ability to pass back changes in the tariff charged on the project.<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law | Emerging | X | | | The Contracting Authority typically bears principal responsibility for changes in law post-bid / post-contract signature.<br>There may be a degree of risk sharing with the Private Partner and there may be | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not | Some projects may also provide for a stabilisation clause that entrenches certain legal positions (such as the current tax regime) against any | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and |

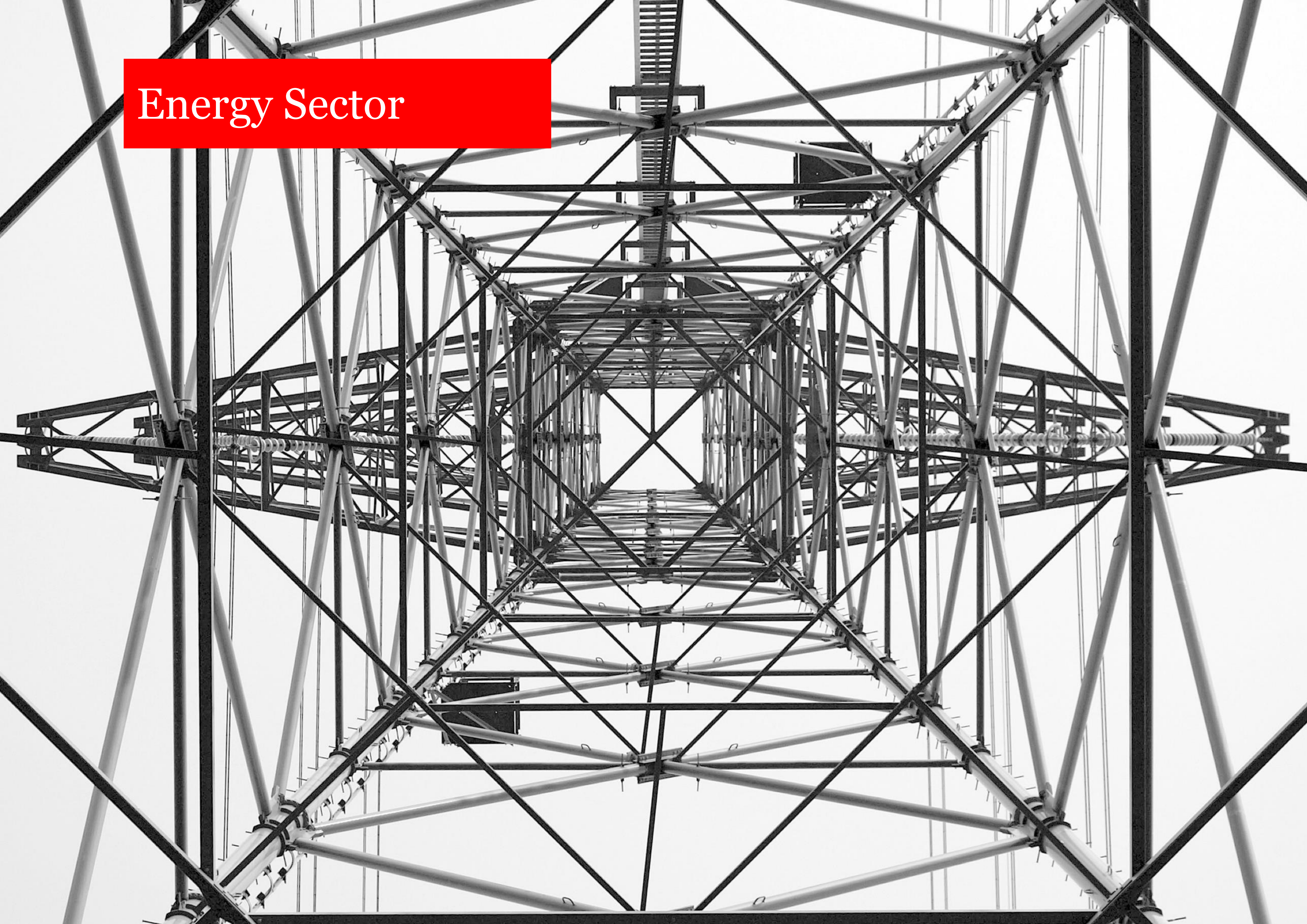
| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | can be maintained.<br>Change in taxation. | | | | | certain risks that the Private Partner is expected to bear alongside the remainder of the market.<br>The Private Partner would look to be kept whole in respect of changes of law which have a material adverse effect on the economic equilibrium of the concession.<br>Where the parties are unable to agree how to reasonably take into account the effects of the change in law so as to re-establish the economic equilibrium the Private Partner will have a right to terminate (typically on a Contracting Authority default basis). | inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | future changes in law. This may require a level of parliamentary ratification of the concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | | X | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority. | | | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | | X | | Inflation risk is typically borne by the Private Partner and transferred to the port users.<br>The Private Partner retains the risk of the impact on demand caused by any increases in the tariffs.<br>The Private Partner will accordingly need the ability to increase the port tariffs, but this ability may often be subject to regulation (as tariff-raising is likely to be a sensitive political issue), and so the Private Partner may need additional Contracting Authority support. | This risk may be mitigated to some extent where the Private Partner has the right to collect the tariffs in hard currency, which more closely matches project expenditure / financing. | Support may be needed eg to ensure tariffs can be levied in foreign currency and/or to ensure swift and reliable convertibility of local currency, as well as expatriation of project revenues. | If tariff increases are subject to regulation, then this creates uncertainty. The Private Partner may be able to get the Contracting Authority to stand behind any shortfalls in tariff increases which the Private Partner anticipates making (eg to ensure that USD inflation was covered as a minimum). |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Any bid will be awarded on the basis of the Private Partner's technical expertise and financial resources and for this reason the sponsors of the Private Partner should remain involved in the project. | The Contracting Authority will limit the Private Partner's shareholder's ability to change their shareholding for a period (i.e. there is typically a lock-in for at least the construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>The tender documentation | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | should set out proposals for any restrictions on the shareholders of the Private Partner. | | |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Any bid will be awarded on the basis of the Private Partner's technical expertise and financial resources and for this reason the sponsors of the Private Partner should remain involved in the project. | The Contracting Authority will limit the Private Partner's shareholder's ability to change their shareholding for a period (i.e. there is typically a lock-in for at least the construction period and in some cases for up to the first 15 years of operations).<br>The tender documentation should set out proposals for any restrictions on the shareholders of the Private Partner.<br>In particular any incoming shareholder will need to have the requisite financial capacity and technical expertise to be a sponsor in a port operating company. | | In emerging markets there is typically more restriction on any change of control in the Private Partner given the riskier nature of emerging market projects. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in the port sector. | Developed | X | | | This risk is unlikely to be passed to the Private Partner as technology is unlikely to be a major component of the project. | Obligation on the Private Partner to provide service which seeks for continuous improvement for minor changes. Obligation to operate in accordance with best industry practice may also impose some obligation on Private Partner to take on improvements in technology. | Major changes would require a variation. | Typically not dealt with in detail in developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in the port sector. | Emerging | X | | | This risk is unlikely to be passed to the Private Partner as technology is unlikely to be a major component of the project. | Obligation on the Private Partner to provide service which seeks for continuous improvement for minor changes. Obligation to operate in accordance with best industry practice may also impose some obligation on Private Partner to take on improvements in technology. | Major changes would require a variation. | Typically not dealt with in detail in emerging markets. |
| Early termination (including any compensation) | The risk of a project being terminated before the expiry of time and the monetary | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority | Early termination compensation is well defined and political risk insurance is not typically obtained due to a |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| risk | consequences of such termination | | | | | Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common 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. While it may seem that project lenders are therefore are not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | each party to remedy any alleged default. | giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | lesser risk of the Contracting Authority defaulting on its payment obligations. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity; and<br>(3) Private Partner default – the Private Partner would typically get a payment that is a function of the | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the | In emerging markets, there may also be sovereign guarantees which support the Contracting Authorities payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | input cost of the project (construction value / book value) or the outstanding senior debt (in some cases there may even be a return of unamortised equity / subordinated debt).<br><br>In many emerging markets it is common 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. While it may seem that project lenders therefore are not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | |

# Energy Sector



# Energy Sector

## Risk Matrix 6: Solar PV (BOO)

- The emerging market project is based primarily on solar PV projects built on a BOO basis:
  - Assumes the electricity produced from the solar PV project is sold to a state owned single buyer
  - Project scope may include associated infrastructure, such as electricity transmission infrastructure which is then handed over to the state owned off taker
  - Assumes the PV project will connect to the existing transmission lines and electric system which the Contracting Authority owns (will own to the extent the project company has been asked to build transmission infrastructure)
- The developed market is based primarily on solar PV projects built on a BOO basis:
  - Enhanced single buyer scheme whereby power generated from a project will be sold to a state enterprise off taker
  - Assumes a private sector identifies the site on which the project will be built
- Key risks
  - Resource or input risks
  - Performance/price risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | X | | The Private Partner bears full responsibility for the suitability of the project site, including geological, geotechnical, archaeological conditions.<br>The Private Partner is obliged to obtain and maintain the peaceful use and possession of the project site, as well as all requisite access rights and servitudes that might be required.<br>The Private Partner bears full responsibility to procure the construction, operation and maintenance of the facility in accordance with all laws and consents and accordingly, bears full responsibility for obtaining all environmental permits, consents and licenses. | The Private Partner should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the facility.<br>The Private Partner may seek to pass the site risk down to the EPC contractor and in terms of the lease agreement (if applicable), to the extent possible.<br>The Private Partner must ensure that the construction and/or operating contractor complies with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | Generally, neither the Government authority nor the contracting authority has an obligation to facilitate the issuance of the required permits or consents, nor does it have any obligations in relation to assisting with securing the site.<br>The exemption will be where the project requires new transmission lines to be constructed; construction of transmission lines will be done by the contract authority, but at the costs of the Private Partner. In such case, the contracting authority will be responsible for securing the right of ways required for construction of the transmission lines. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets. For example, the requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada.<br>On the other hand the rights of private landowners against forced sales or expropriation might be stronger in developed markets, requiring more time to acquire the land and all necessary rights for the development of the project such as easements for the connection corridor. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | | X | | The Private Partner bears fully responsibility for the suitability of the project site, including geological, geotechnical, archaeological conditions.<br>The Private Partner is obliged to obtain and maintain the peaceful use and possession of the project site, as well as all requisite access rights and servitudes that might be required.<br>The Government Authority has the right of access to the project site to verify compliance by the Private Partner with its obligations under the relevant Government agreements.<br>The Private Partner bears full responsibility to procure the construction, operation and maintenance of the facility in accordance with all laws and consents and accordingly, bears full responsibility | The Private Partner should undertake detailed ground, geotechnical, environmental and social assessments/surveys and should disclose such information to the Government Authority as part of the bidding process.<br>The Private Partner should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the facility.<br>The Private Partner should also manage any indigenous land rights issues that may impact on the use of the site. The Private Partner must provide evidence | Neither the Government Authority nor the Contracting Authority has an obligation to facilitate the issuance of the required permits or consents, nor does it have any obligations in relation to assisting with securing the site. | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | for obtaining all environmental permits, consents and licenses. | to the Government Authority that no land claims have been lodged by interested or affected parties against the proposed site prior to the award of the tender by the Government Authority. These land claims can however be lodged at any time during the construction or operations phase of the project. Therefore, the Private Partner assumes the responsibility of settling any such claims (to the extent such claims are successful).<br>The Private Partner may seek to pass the site risk down to the EPC contractor and in terms of the lease agreement (if applicable), to the extent possible.<br>Where a Private Partner is leasing the site from a land owner, the Private Partner may consider including in the lease agreement the right to change the site in case of archaeological discoveries / site contamination.<br>The Private Partner must ensure that the construction and/or operating contractor complies with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | | It is common for the site of the solar PV project to be determined by the Contracting Authority in order to maximise the energy yield, lower connection costs and reduce the risk of negative impact on the electricity network. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Developed | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project.<br>The Private Partner will retain responsibility for social impacts which are unavoidable as a result of the development of the project (e.g. compensation relocation of urban communities / businesses). | The Private Partner must ensure that the construction and/or operating contractor complies with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | The project may be treated as a "strategic interest" project and benefit from an expedited or co-ordinated permitting process. | Contracting authorities are requiring Private Partners to engage in wider community engagement during the permitting phase. A recent trend is a push for localisation of benefits including community investment and requiring Private Partners to give priority to local contractors and suppliers. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the | Emerging | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across | The Private Partner must ensure that the construction and/or operating contractor complies | The Private Partner will need to take meaningful steps both before and | International lenders and development finance institutions are particularly |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | project and the subsequent risk of damage to the environment or local communities. | | | | | the project.<br>The Private Partner will retain responsibility for social impacts which are unavoidable as a result of the development of the project (e.g. compensation for expropriation of indigenous land rights and/or relocation of urban communities / businesses). | with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may to be recorded in the Finance Documents. | sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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.<br>Contracting Authorities may seek strong protections as regards site remediation and transfer provisions due to solar PV projects having a shorter design life than traditional infrastructure projects. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the facility and its compliance with the output / performance specification.<br>Any changes to the design after being awarded as a preferred bidder requires the consent of the contracting authority, although the contracting authority takes no responsibility for the inaccuracy of the design or the risk of delays in approving any changes. | Pass through obligations to the construction contractor and project relief principles equivalent to those set out in the power purchase agreement will need to be incorporated into the EPC contract.<br>The Private Partner may seek to be prescriptive with the EPC contractor regarding the output specification. It may seek a degree of cooperation and feedback during the development phase to ensure that an appropriate risk allocation for design responsibility is reached when finalising the output specification. | Contracting Authority may include specific design requirements such as technology type and country of manufacture of solar PV panels and inverters which provide grid stability support. | Developed market solar PV projects benefit from the low risk nature of the technology. This allows Private Partners to submit competitive proposals with short design and construction timeframes. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the facility and its compliance with the output / performance specification.<br>Any changes to the design after being awarded as a preferred bidder requires the consent of the Contracting Authority, although the Contracting Authority takes no responsibility for the inaccuracy of the design or the risk of delays in approving | Pass through obligations to the construction contractor and project relief principles equivalent to those set out in the Government agreements will need to be incorporated into the EPC contract.<br>The Private Partner may seek to be prescriptive with the EPC contractor regarding the output specification. It may seek a | Contracting Authority may prescribe the design of the project with a detailed minimum function specification. This may include requirements as technology type and country of manufacture of solar PV panels and inverters and performance ratio levels. | Contracting Authorities may require Private Partners to localise part of the supply chain for the solar PV project. South Africa is one of the best examples of successful localisation for the solar PV sector. A recent trend is requiring Private Partners to install equipment which mitigates the impact of the |

| Risks<br>Category | Description | Variable | Allocation<br>Public | Private | Shared | Rationale | Mitigation<br>Measures | Government Support Arrangements<br>Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | any changes. | degree of cooperation and feedback during the development phase to ensure that an appropriate risk allocation for design responsibility is reached when finalising the output specification. | | project on the electricity network such as cloud monitoring equipment and inverters which provide some level of grid support service such as frequency response. |
| Construction risk | Labour dispute.<br>Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | Private Partner assumes all these risks, except:<br>- where certain construction work is dependent on contracting authority work/related infrastructure work being completed in which case risk could be shared; and<br>- where a labour dispute falls within the definition of the force majeure event under the power purchase agreement, in which case the risk could be shared. | The Private Partner shall seek to pass these risks to the contractors under the EPC contract or O&M contract, as the case may be. Also, certain risks can be further mitigated through insurance. | If standards change after the tender, the Contracting Authority may consider increasing the payments to account for increased costs of compliance or Private Partner will be excused from compliance with the new standard. | Associated risks that can increase construction costs such as anti-dumping levies on solar panels (as applied in Europe recently) should be considered. Risks generally seen as low based on strong global track record for solar PV projects in recent years. |
| Construction risk | Labour dispute.<br>Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | Private Partner assumes project management and construction risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared.<br>Private Partner takes labour dispute risk unless political.<br>Private Partner takes risk of IP right infringement.<br>Private Partner required to construct to specific standards.<br>Private Partner takes risk of cost overrun where no compensation/relief event applies. | Private Partner will attempt to address by passing through obligations to the construction contractor and the management services contractor (if applicable).<br><br>The transportation of the solar PV panels is best mitigated by the Private Partner ensuring that it has adequate insurance in place, where applicable. The transportation of the solar PV panels is also mitigated by the Private Partner passing through that risk to the EPC contractor. | Construction risk is generally passed to the Private Partner. The Contracting Authority will usually take responsibility for force majeure events in country and change in law to the extent that such events affect construction of the project. | Risks such as delays in refunds of goods and services tax, import duties and restrictions and restrictions on using foreign workers should be considered. |
| Completion (including delay and cost | The risk of commissioning the asset on time and on | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through | Generally, the Private Partner will seek to pass risks associated with delay in | | The Contracting Authority may have a role of monitoring the progress of construction, |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| overrun) risk | budget and the consequences of missing either of those two criteria. | | | | | the engagement of a suitable EPC contractor.<br><br>The principal risk arising out of delay will be a delay liquidated damages payable to the contracting authority under the power purchase agreement, termination of the power purchase agreement after, loss of expected revenue, ongoing costs of financing construction and extended site costs.<br><br>A scheduled COD is fixed under the power purchase agreement. Failure to commence the commercial operation within the scheduled COD will result in the Private Partner being subject to delay liquidated damages, calculated on a daily basis and paid by deduction of a performance security placed with the contracting authority. Once the performance security has been fully deducted, and the facility has still not commenced its commercial operation, the power purchase agreement will be terminated.<br><br>In addition, any delay in achieving commercial operation of the facility will have the practical effect of a shorter term of the power purchase agreement, as the operating period of the power purchase agreement will be a certain period from the scheduled COD.<br><br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of parts, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br><br>The Private Partner will be expected to demonstrate adequate system performance before it is allowed to fully operate the system. | achieving commercial operation on to the EPC contractor in order to minimise potential impact on the project. EPC Contracts will often contain liquidated damages and financial penalties and can assist in enforcing construction deadlines.<br><br>Typically, the amount of the delay liquidated damages to be paid by the EPC contractor under the EPC Contracts will factor in the delay liquidated damages which the Private Partner is required to pay to the contracting authority under the power purchase agreement and the financing costs of the project during the period of the delay.<br><br>In relation to commissioning and connection to the grid, the EPC contract should contain an obligation that the EPC contractor design and construct the facility so as to be compliant with the relevant codes (as required in terms of the relevant Government agreements) and that the EPC contractor assists the Private Partner in providing the information required to evidence compliance with the codes (as defined in the relevant Government agreement). | | compliance with permitting conditions and be involved in the connection and commissioning process. The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays have been the fault of the Contracting Authority such as failure of the grid operator to connect the project in a timely manner. |
| Completion (including delay | The risk of commissioning the | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun | The Government agreements contain (i) a hard wired date by | An independent engineer is sometimes appointed | The completion risk for solar PV projects in emerging |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| and cost overrun) risk | asset on time and on budget and the consequences of missing either of those two criteria. | | | | | risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>Scheduled COD is hard wired in the PPA and any delay in achieving commercial operation by the scheduled COD will have the practical effect of a shorter agreement term. The operating period is reduced by an additional day and the expiry date is brought forward by one day. The last day by which the Private Partner is permitted to reach commercial operation is 18 months after Scheduled COD and failure to reach this target gives the Contracting Authority to terminate the PPA.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of parts, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected to demonstrate adequate system performance before it is allowed to fully operate the system. | which the Private Partner must commence and continue construction after signature of the PPA, (ii) incentives for timely completion (in the form of allowing for an early operating period and for each unit of a facility to commence generating electricity prior to the facility being finally completed), and (iii) the implementation of a longstop date (18 months post scheduled COD) which creates the tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its responsibilities in spite of delays before the Contracting Authority can terminate the Government agreements.<br>Generally, the Private Partner will seek to pass risks associated with delay in achieving commercial operation on to the EPC contractor in order to minimise potential impact on the project. EPC Contracts will often contain liquidated damages and financial penalties and can assist in enforcing construction deadlines.<br>It may be difficult for the Private Partner to mitigate integration risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the construction programme has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective strategies.<br>In relation to commissioning and connection to the grid, the EPC | by the Private Partner to act on behalf of the Contracting Authority in monitoring the Private Partner's compliance with the relevant construction milestones and the completion of the facility.<br>The independent engineer, on behalf of the Contracting Authority plays a critical role during the various stages of construction and the testing and commissioning process in terms of ensuring that the Private Partner reaches completion before or as close as possible to the scheduled COD.<br>The Private Partner should pass construction milestone reporting and testing obligations on to the contractors to ensure compliance with the Contracting Authorities rights and the role assumed by the independent engineer.<br>The Contracting Authority will be liable to make compensation payments (in relation to cost overruns) to the Private Partner to the extent that commercial operation is delayed as a result of the material breach of the relevant Government agreement by the relevant Contracting Authority.<br>The Contracting Authority will have a critical role to play at stages of the construction, testing and connection process. Examples include | markets is generally viewed as lower than other energy and infrastructure projects. This is due to the modular nature of the technology and the comparatively simple nature of the construction. This encourages Contracting Authorities to seek short construction timetables and pass risks to the private sector which may not be possible with other types of project. |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | contract should contain an obligation that the EPC contractor design and construct the facility so as to be compliant with the relevant codes (as required in terms of the relevant Government agreements) and that the EPC contractor assists the Private Partner in providing the information required to evidence compliance with the codes (as defined in the relevant Government agreement). | approval rights in respect of final design, obligations to construct grid infrastructure and participation in the connection process.<br><br>The Contracting Authority may need to take responsibility for delays caused by any act or omission by the Contracting Authority or any other public body such as failure to issue necessary consents in good time or failure to provide adequate grid infrastructure. | |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br><br>Damage pollution accidents.<br><br>Meeting handback requirements.<br><br>Health and safety vandalism.<br><br>Equipment becoming prematurely obsolete.<br><br>Expansion. | Developed | | X | | The Private Partner bears the risk of setting and meeting the performance specification.<br><br>The Private Partner will be paid based on the actual amount of power sold under the power purchase agreement. If the facility runs at a lower capacity than initially intended, it will effectively result in less payment received by the Private Partner.<br><br>The Private Partner will receive a fixed rate of Feed-in-Tariff with respect to the sale of power under the power purchase agreement up to 100% of the capacity factor. While it is possible for the facility to run at an increased capacity than initially intended, the price of power sold in excess of 100% of the capacity factor will the average wholesale price of electricity sold by the contracting authority, subject to a maximum amount equivalent to the rate of the Feed-in-Tariff under the power purchase agreement.<br><br>Adding more panels to what is specified under the power purchase agreement is not allowed and will be considered a material breach of the power purchase agreement. Therefore the Private Partner should ensure that advanced technology is used to ensure maximum export of electricity into the grid to ensure maximum | The Private Partner should ensure that appropriate guaranteed levels be included in the construction and operations contracts with damages payable by the contractors for a failure to reach those guaranteed levels. | The Contracting Authority may take certain limited performance risks such as the impact of shading on the energy production from a solar PV project from new developments adjacent to the site or restrictions on tree felling/pruning.<br><br>The impact of large scale intermittent renewables on the stability of the grid system is key risk associated with solar PV projects. | Contracting Authorities may seek protection against poor performance through performance ratio and/or availability guarantees. Contracting Authorities may also seek independent verification of energy yield assumptions during the procurement phase. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | revenue. | | | |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Emerging | | X | | The Private Partner bears the risk of setting and meeting the performance specification.<br>The Contracting Authority does allow for a facility to run at a lower capacity than initially intended, but does not allow for a facility to run at an increased capacity than initially intended and therefore the Private Partner should ensure that advanced technology is used to ensure maximum export of electricity into the grid to ensure maximum revenue.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | The Private Partner should ensure that appropriate guaranteed levels be included in the construction and operations contracts with damages payable by the contractors for a failure to reach those guaranteed levels.<br>If the Private Partner achieves facility completion at a lower capacity than the initial contracted capacity, the Contracting Authority gives the Private Partner the ability post completion but before the longstop date (being 18 months post scheduled COD), at its own cost, and in the shortest possible time, to effect repairs or replacements to the facility whereafter the capacity of the facility will be re-assessed. This is in an effort to allow the Private Partner to run the facility at the contracted capacity, thereby optimising revenue and mitigating the risk of extended performance at a lower capacity. | The Contracting Authority may take certain performance risks such as the impact of shading on the energy production from a solar PV project from new developments adjacent to the site. The Contracting Authority will usually take the risk of grid failures or stability affecting the output of the plant.<br>Contracting Authorities may seek protection against poor performance through performance ratio and/or availability guarantees.<br>The impact of large scale intermittent renewables on the stability of the grid system is key risk associated with solar PV projects. | Contracting Authorities may also seek independent verification of energy yield assumptions during the procurement phase. This is relevant in many emerging markets where the Contracting Authority is expecting a certain level of output from the solar PV project in order to meet the customer load requirements. We have seen some Contracting Authorities require the Private Partner to guarantee a minimum level of output so that the performance risk is fully transferred to the private sector. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs and solar power for the project and to manage the costs of those inputs. | Some of the cost risk can be managed by passing the risk through to the contractors although this will increase contractor's fees. | As noted in performance/price risk, the Contracting Authority may assume certain risks where the energy production of the project is affected by actions by third parties such as shading. | Private Partner usually performs the energy yield assessment for the site and assumes the risk that the energy yield forecasts are incorrect. There are limited other inputs for a solar PV project so the risk is generally seen as limited to the accuracy of such forecasts and the risk that the shading conditions change over time. In some countries there are concerns over the impact of climate change on the climatic conditions and in particular increased or different cloud patterns.<br>Overly optimistic energy yield |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | | forecasts are a key risk factor in solar PV projects. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs and solar power for the project and to manage the costs of those inputs.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as reliance on local source materials where these may be affected by labour disputes, embargos or other political risks, or where the Private Partner relies on the Contracting Authority to provide works or services or provide utility supplies. | Some of the cost risk can be managed by passing the risk through to the contractors although this will increase contractor's fees.<br>The agreements with the Contracting Authority allow for the Contracting Authority to share in certain identified risks in specific circumstances which provide relief to the Private Partner. | As noted in performance/price risk, the Contracting Authority may assume certain risks where the energy production of the project is affected by actions by third parties such as shading or lack of access to the electricity grid.<br>The Contracting Authority may also take responsibility for failure to provide utilities required for the testing and commissioning process. | The Contracting Authority may undertake the initial he energy yield assessment for the chosen site. However, the Private Partner will usually be required to review this assessment and the risk that the energy yield forecasts are incorrect. There are limited other inputs for a solar PV project so the risk is generally seen as limited to the accuracy of such forecasts and the risk that the shading conditions change over time. In some countries there are concerns over the impact of climate change on the climatic conditions and in particular increased or different cloud patterns.<br>Overly optimistic energy yield forecasts are a key risk factor in solar PV projects. |
| Demand risk | The availability by both volume and quality of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Developed | | | X | The power purchase agreement may not contain a take-or-pay obligation on the Contracting Authority with the Private Partner to be paid on the basis of the power delivered to the Contracting Authority. These agreements often work on a "must take" basis as the electricity produced cannot be stored and the Contracting Authority takes the risk that the system does not require the electricity at the times that the solar PV project is generating. If the project is constrained by the system operator the Contracting Authority may be required to make compensation payments to the Private Partner. | It is common for renewable generators to have priority access to the electricity system on the basis that renewable generation is being encouraged and the resource )wind and sun ( is intermittent. | The Contracting Authority will assume primary demand risk for the electricity produced by the project. | In certain developed markets the Private Partner may be required to sell the output into a power pool. In such cases the power purchase agreement with the Contracting Authority will operate as contract for difference where the Contracting Authority pays the Private Partner the difference between market prices for the electricity and the fixed price agreed between the Contracting Authority and the Private Partner during the procurement process. If market prices are higher than the fixed price the Private Partner will owe the difference to the Contracting Authority. In many developed markets there may be green benefits |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | | associated with the production of renewable energy. These benefits are usually transferred to the Contracting Authority and are price is included within the fixed price per MWh agreed at the outset so there is no additional cost to the Contracting Authority. In some cases the green benefits may be sold to the market and the benefits shared between the parties. |
| Demand risk | The availability by both volume and quality of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Emerging | X | | | The Contracting Authority will assume the risk that there is no demand for the electricity produced.<br>The power purchase agreement may not contain a express take-or-pay obligation on the Contracting Authority with the Private Partner to be paid on the basis of the power delivered to the Contracting Authority. These agreements often work on a "must take" basis as the electricity produced cannot be stored and the Contracting Authority takes the risk that the system does not require the electricity at the times that the solar PV project is generating. If the project is constrained by the system operator the Contracting Authority will usually be required to make compensation payments to the Private Partner. | In certain emerging markers, in order to mitigate the demand risk associated with having to source solar PV panels locally, certain EPC contractors and/or Private Partners have opened up solar PV factors in the specific local market to both mitigate and comply with (i) the demand risk and (ii) local bidding requirements.<br>The Contracting Authority will mitigate the demand risk assumed under the power purchase agreement through system planning before and during the procurement process and operations. To the extent that supply exceeds demand in any period this is usually mitigated by reducing the output of flexible generation such as hydropower or thermal generators. As the storage technology improves and reduces in cost this will enable the Contracting Authority to mitigate the demand risk by storing power and then using it to meet system peak demand. | The Contracting Authority will assume primary demand risk for the electricity produced by the project. If the Contracting Authority is the local utility it is common for the government to stand behind the obligations of the utility as many utilities in emerging markets are reliant on insufficient and/or fluctuation in demand and consumer credit risk that raises concerns for utility credit. | In most emerging markets the electricity sector has not been liberalised and the utility (the usual Contracting Entity) is vertically integrated. Demand risk for IPPs is borne by the Contracting Authority.<br>A recent trend is that the Contracting Authority may seek to retain any entitlement to carbon credits or other green benefits arising from the project. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project. | Developed | | X | | The Private Partner will have principal responsibility for operating and maintaining the facility in accordance with all applicable laws, consents and the standards of a reasonable and prudent operator (as set out in the power purchase | The Private Partner should take time to ensure that the output specification properly defines the maintenance obligations which it then passes on to the operations and maintenance contractor to | | Maintenance is generally regarded as a low risk for solar PV projects in developed markets. In many markets there is now a deep pool of trained operators and the |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | | | | | agreement and relevant regulations)<br>The Contracting Authority may inspect and test the facility to ascertain whether it is maintained to the standards designated by the contracting authority.<br>If the facility is not so maintained the contracting authority may require the Private Partner to undertake works as necessary to ensure that the facility is maintained to such standards, at the expenses of the Private Partner. | ensure that the system remains robust throughout the life of the project.<br>Pass through obligations to the operations and maintenance contractor and project relief principles equivalent to those set out in the Government agreements will need to be incorporated into the O&M contract. | | O&M activities are not complex or expensive. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have principal responsibility for operating and maintaining the facility in accordance with all applicable laws, consents and the standards of a reasonable and prudent operator (as set out in the relevant Government agreement )<br>The Contracting Authority may inspect and test the facility to ascertain whether it is maintained to the standards of a reasonable and prudent operator (as defined in the relevant Government agreement).<br>If the facility is not so maintained the Government Authority may require the Private Partner to undertake works as necessary to ensure that the facility is maintained to such standards. | The Private Partner should take time to ensure that the output specification properly defines the maintenance obligations which it then passes on to the operations and maintenance contractor to ensure that the system remains robust throughout the life of the project.<br>Pass through obligations to the operations and maintenance contractor and project relief principles equivalent to those set out in the Government agreements will need to be incorporated into the O&M contract. | The Contracting Authority will have primary responsibility to maintain the grid connection assets. The Contracting Authority may have wider obligations such as maintenance of access roads and other utilities required for the operation of the project. In some circumstances the Contracting Authority may assume responsibility for facilities which are shared between multiple solar PV projects such as water treatment plants. | Large scale solar projects in emerging markets have only been installed and entered into operation in recent years. Although the track record is limited maintenance is generally regarded as a low to medium risk for solar PV projects. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | The events that will be regarded as “force majeure” is stated in the power purchase agreement, which includes, among others:<br>- Act of the Government, such as change in energy policy, change in law, which prevent any party from performing its obligations under the power purchase agreement;<br>- Act of war;<br>- Labour strikes, terrorism, earthquake, flood;<br>- Disruption of power distribution system.<br>The obligations of the party affected by the force majeure event will be suspended during the period of force majeure, but the affected party will be responsible for the | If the force majeure has occurred and affected the Private Partner, the Private Partner will be exempted from performing its obligations under the power purchase agreement during the period of such force majeure. However, it is likely that there will be no revenues from the project during such period. The Private Partner shall seek to mitigate this risk through insurance. | The Contracting Authority will generally not take natural force majeure risk under the power purchase agreement. The power purchase agreement may provide for an extension of the term to the extent that the project could not deliver electricity due to such a force majeure event. | Private Partners will expect to rely on business interruption and material damage insurance policies to mitigate the risk of force majeure events. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | expenses required for remedying such force majeure event, to the extent possible.<br>The power purchase agreement, however, does not contain a clause that extends the term of the power purchase agreement in case of the force majeure event. | | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and you can expect to see a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (eg fire / flooding / storm, vandalism etc), and<br>- force majeure events which typically cannot be insured (eg strikes / protest, terror threats / hoaxes, suicide / accident, passenger emergency, emergency services, trespass etc.)<br>Force majeure events occurring during construction will cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operation, the impact of the force majeure will interrupt the revenue stream and there is scope for the risk to be shared with the Contracting Authority, provided certain conditions are met. | The agreements with the Contracting Authority allow for a sharing of the risk of force majeure and provide relief to the Private Partner in certain instances provided specific conditions are met. To the extent that the conditions are met, the Private Partner can be relieved from liability under the Government agreement to the extent that it cannot perform all or a material part of its obligations thereunder as a result of a force majeure event.<br>If the force majeure event occurs prior to scheduled COD, scheduled COD shall be postponed by such time as is reasonable for the force majeure event, taking into account the likely effect of any such delay. If the force majeure event occurs after scheduled COD, but before COD (provided that the longstop date has not occurred) the longstop date shall be postponed by such time as is reasonable for the force majeure event, taking into account the likely effect of any such delay. To the extent an force majeure event occurs within specified time and continues for a specified time, then the Private Partner is entitled to an extension of term and/or other relief from the Contracting Authority which will place it in the same overall net economic position as it would have been in but for such force majeure event | To the extent an force majeure event occurs within specified time and continues for a specified time, then the Private Partner may be entitled to an extension of term and/or other relief from the Contracting Authority which will place it in the same overall net economic position as it would have been in but for such force majeure event. | Contracting Authorities often encourage Private Partners to rely on insurance rather than allocate all force majeure risk to the Contracting Authority. If relief or compensation is payable this may be at a reduced rate which reflects the shared nature of the risk allocation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | provided that any compensation shall not take a monetary form and the extension of the term shall not extend beyond 10 years.<br>Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. To the extent that the Private Partner is entitled to bring a claim under an insurance policy, it may not be entitled to enforce certain rights for relief vis a vis the Contracting Authority. | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Developed | | X | | The Private Partner bears all exchange rate and interest rate risk.<br>The contracting authority does not assume any risk in relation to the devaluation of local currency. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in the market.<br>The contractor should also seek to hedge any foreign currency exposure it may have in relation to foreign currency imports. | | Exchange and currency convertibility risk is generally regarded as low risk in developed markets. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Emerging | | X | | The Private Partner bears all exchange rate and interest rate risk.<br>The Government Authority does not assume any risk in relation to the devaluation of local currency. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in the market.<br>The contractor should also seek to hedge any foreign currency exposure it may have in relation to foreign currency imports. | The Contracting Authority may give assurances as to currency convertibility and availability of foreign exchange. In many emerging markets the power purchase agreement is denominated in USD or another foreign currency or subject to indexation in a foreign currency. This is intended to protect the Private Partner and reduce the tariff and financing costs but exposes the Contracting Authority to the risk of a currency mismatch as its revenues will generally be in the local currency. | The Private Partner will generally take interest rate risk in emerging markets and the exchange rate and convertibility risk will be borne by the Contracting Authority or shared. Recent developments include new tools to mitigate such risks from IFC and other development banks and DFIs. |
| Insurance risk | The risk that insurance | Developed | | X | | The Private Partner is responsible for | The Private Partner should | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | for particular risks is or becomes unavailable. | | | | | taking insurance for the project at its own expense. The power purchase agreement is silent on the requirement with respect to insurance that the Private Partner is required to undertake. The insurance requirements will normally be stipulated by the lenders providing financing for the project under the Finance Documents. | engage an insurance advisor to advise them on the insurance arrangement required for the project. | | |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | The Private Partner has an obligation to insure at its own expense, as may be required by law and the standards of a reasonable and prudent operator (as defined). The Private Partner has an additional obligation to ensure that its contractors are similarly insured.<br>The Government agreements are generally silent on the remedy in relation to insurance where insurance for a particular risk is unavailable, but the insurance is still required by law or would general be required in accordance with the standards of a reasonable and prudent operator.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project and should raise this with the Contracting Authority and the funders to the project.<br>Replacement of insurances is often addressed as part of the financing negotiations with commercial lenders, where we see the development of schedules of insurance which are indicative of insurance required by law and the standards of a reasonable and prudent operator (as defined). | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | | | X | Political risk is included as an event of force majeure under the power purchase agreement. | As the event is considered a force majeure, it is unlikely that the Private Partner will be able to claim damages from the contracting authority under the power purchase agreement. The Private Partner shall seek to mitigate this risk through insurance. | | Political risk in developed markets have become a higher risk issue in recent years due to the adverse changes in law in markets such as Spain, Bulgaria and Czech Republic. Private Partners may seek assurances that they are protected against political risks through the general laws and bilateral investment treaties. |
| Political risk | The risk of Government | Emerging | | | X | Expropriation and nationalisation of a | The Contracting Authority will | To the extent that certain | A recent trend is splitting |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | | | | | material part of the facility and/or shares in the Private Partner are treated as Government default. The Contracting Authority will bear this risk. The Private Partner will be entitled to issue notice on the Contracting Authority to remedy within a specified period of time, failing which it will be entitled to terminate the relevant agreement and shall be entitled to compensation from the Contracting Authority.<br>A specific list of events of a political nature (such as general strikes, risks of wars / riots / embargos) is treated as force majeure events. As set out in relation to force majeure, the Contracting Authority will share in the responsibility for these political events provided certain conditions are met. | need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this.<br>Investors and commercial lenders may also be able to cover themselves by using political risk or terrorism insurance. | political risks occur, it may lead to a termination event and the Contracting Authority stands behind debt and equity. | political risk into direct and indirect political risk events. Direct political risk events are those events which are clearly the responsibility of Contracting Authority or other public bides such as expropriation. Indirect political events include war, blockades and other events caused by third parties. Contracting Authorities may seek to apply a different regime to the types of political risk event. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | Change in law risk is included as an event of force majeure under the power purchase agreement.<br>Change in law risk may be assumed by the Contracting Authority although it is common for this to be limited and deal only with discriminatory changes which affect the project. | As the event is considered a force majeure, it is unlikely that the Private Partner will be able to claim damages from the contracting authority under the power purchase agreement. The Private Partner shall seek to mitigate this risk through insurance.<br>In many developed markets there are investor protection regimes and well recognised legal principles that protect investors against retrospective changes in law. | The enabling legislation may contain specific grandfathering provisions which give the Private Partner comfort. In several markets there will be express protection in the PPA with the Contracting Authority assuming the risk of adverse changes in law. | Change in law risk is generally regarded as medium to high risk due to the frequency and severity of changes in law. In particular this has been a major concern in Europe and Australia. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | | | X | The Contracting Authority typically bears principal responsibility for changes in law post-contract signature.<br>There is a degree of risk sharing with the Private Partner as follows:<br>Private Partner would look to be kept whole in respect of changes of law which are discriminatory (towards the project or the Private Partner), or specific (to the solar PV sector) or effects parties undertaking similar projects.<br>The Contracting Authority will not be responsible for an increase in taxes of | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have | The Government stands behind payments of the Contracting Authority should it fail to compensate the Private Partner. | The risk of adverse change in law in emerging markets may in practice be regarded as lower than some developed markets as the Contracting Authority is expressly taking all change in law risk under the power purchase agreement. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | general application which do not discriminate against the Private Partner or parties undertaking similar projects.<br>To the extent the change in law adversely affects the general economic position of the Private Partner, the Private Partner is entitled to such compensation or relief from the Contracting Authority as will place the Private Partner in the same net overall economic position as it would have been but for such change in law.<br>To the extent the change in law beneficially affects the general economic position of the Private Partner, the Private Partner shall pay the value of such benefit to the Contracting Authority so that the Private Partner remains in the same net overall economic position as it would have been had the materially beneficially change in law not occurred.<br>The Private Partner bears a certain financial level of risk before compensation becomes payable, which ensures that claims are only made for material changes in circumstances.<br>Changes in law entitle the Private Partner to engage with the Contracting Authority to effect a remedy with a specified period (which would more than likely be a variation where this is necessary so as to avoid an impossible obligation), failing which, the Private Partner may be entitled to compensation, including monetary compensation. | an impact on it.<br>The Contracting Authority has an obligation to use all reasonable endeavours to minimise and mitigate the effects of any change in law. | | |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | | X | | Inflation risk is typically borne by the Private Partner.<br>The power purchase agreement does not provide flexibility to the Private Partners to increase the Feed-in Tariff on account of inflation. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in the market.<br>The contractor should also seek to hedge any foreign currency exposure it may have in relation to foreign currency imports. | | In some markets the tariff will have an element of indexation to local inflation. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | | X | | Inflation risk is typically borne by the Private Partner.<br>The power purchase agreement does not provide flexibility to the Private Partners to | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the | The Contracting Authority will assume the risk of inflation in certain costs through the indexation of | It is common practice to have all or part of the tariff indexed to deal with the impact of inflation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | increase the Feed-in Tariff on account of inflation. | extent possible in the market.<br>The contractor should also seek to hedge any foreign currency exposure it may have in relation to foreign currency imports. | parts of the tariff to inflation. The indexation mechanism may apply to foreign and local components which have been variable costs such as operating costs. | |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | In developed markets the Contracting Authority is less concerned with locking in the shareholders for a certain period of time. This is due to the relatively low level of perceived risk for solar PV projects. In some of the early adopter markets shareholding requirements were imposed. For example in one market, the power purchase agreement requires the original shareholders of the project company (at the time the project has been granted the power purchase agreement) to maintain at least 51% of the total issued shares of the project company until 3 years after the commercial operation date of the project. | When structuring the project company, the Private Partner may consider using a holding company structure whereby the shares in the project company are held by a holding company. Any change of transfer of interest in the project can then be done at the level of the holding company. | | In developed markets is generally unusual for the Contracting Authority to impose limitations on the transfers by shareholders. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Government Authority wants to ensure that the Private Partner to whom the project is awarded remains involved. Bids awarded on basis of the Private Partner's technical expertise and financial resources therefore sponsors should remain involved.<br>The Private Partner is required to obtain the Government Authority's prior written approval for the dilution, sale, assignment, cession, transfer, exchange, renunciation or other disposal of the whole or any part of the issued share capital of and/or the shareholder loans in and to a direct shareholder in the Private Partner, during the period commencing on the signature date of the Government agreements and ending on the date which falls three (3) years after the commercial operation date of the project. Thereafter, the shareholding can change provided that a change in control (as defined) of the Private Partner is not triggered.<br>Control in this context is the power, directly or indirectly, to direct or cause the | Contracting Authority will limit Private Partner's ability to change shareholding for a period.<br>When structuring the project during the financing phase, the Private Partner can structure the project so as to provide a mechanism for shareholders to dispose of their shareholding indirectly prior to the third anniversary of the commercial operation date – provided such disposal does not trigger a change of control.<br>Shareholder interests, particularly minority shareholding interests, must be protected through mechanisms in the shareholders' agreement of the Private Partner. | | Contracting Authorities will generally seek to impose controls on changes in shareholding of the Private Partner. The current trend is to focus on the construction period and an initial period of operation. Following this period there may be requirements that any new party which controls the Private Partner demonstrate it has the technical and financial ability to perform the Private Partner's ongoing obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | direction of the management and policies of a person, whether through the ownership of voting securities or any interest carrying voting rights, or to appoint or remove or cause the appointment or removal of any directors (or equivalent officials) or those of its directors (or equivalent officials) holding the majority of the voting rights on its board of directors (or equivalent body), whether by contract or otherwise.<br>To the extent a change in control of the Private Partner occurs, the consent of the Government Authority must be obtained.<br>The Finance Documents will contain similar provisions and will also require consent from investors and lenders following the third anniversary of the commercial operation date for a change in shareholding. | | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces established technology used in solar PV projects. | Developed | | | X | The power purchase agreement does not contemplate a change of the Feed-in-Tariff in case that the new technology has emerged, which reduces the costs of power generation, and the change of technology is not permitted under the power purchase agreement. Therefore, neither the Private Partner nor the contracting authority will be entitled to require a change in the Feed-in-Tariffs under the power purchase agreement. | | | The risk of disruption is increasing due to higher efficiency modules, new inverter technology and a general trend towards "smarter" renewable energy generation. Private Partners may have some level of protection through change in law provisions. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces established technology used in solar PV projects. | Emerging | | | X | The Private Partner takes the risk of disruptive technology.<br>Where the solar PV plant has been constructed and is operating there is no risk of disruptive technology, as the Private Partner at the time of constructing the solar PV plant would have been required to comply with specific minimum standards which it included in its bid and to provide a specific amount of electricity into the local grid.<br>Where the solar PV plant has not yet been developed or bid, disruptive technology becomes more applicable, especially where the cost of technology is directly linked to the tariff in a competitive bidding | Private Partner may seek to place positive obligation on contractors and suppliers to upgrade technology during the procurement process. | | Contracting Authorities may impose requirements on the Private Partner to incorporate new technology into the project as it becomes available, particularly where this reduces overall systems costs. For example, a requirement to install cloud monitoring equipment or more responsive inverters which can provide system support. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | process. In this scenario, disruptive technology at a lower price may be a benefit to the Private Partner.<br>In certain cases, where the solar PV market "is more developed" increasingly the Government Authority, is capping the tariff that the Private Partner is entitled to bid based on the fact that the Government Authority is aware of new and more competitive technology which can drive the cost down. This requirement places additional constraints on the Private Partner and the possible profits of the project. | | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | Either party under the power purchase agreement will have the right to terminate the power purchase agreement if the other party has committed a breach of the power purchase agreement, and has failed to remedy such breach after it has received a written notice from the non-defaulting party. However, if the contracting authority is a defaulting party, there may be no pre-determined termination payment under the power purchase agreement. The Private Partner will have to claim for damages under the general principles of law. | Depending on the type of the project, the lenders may be able to enter into an agreement with the contracting authority giving the lenders step-in rights in the case of the contracting authority calling a Private Partner default. The lenders would typically be given an opportunity to remedy the breach of the Private Partner to prevent the power purchase agreement from being terminated. | The Contracting Authority will assume the risk of early termination for its default and this may extend to termination which has been caused by the actions by other public bodies. | In general power purchase agreements in developed markets do not include specified levels of compensation payable upon termination and the parties will have the ability to claim damages the losses suffered as a result of early termination. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination.<br>For termination as a result of a Contracting Authority default, the Private Partner would be compensated for debt (due and payable) and equity (including a level of equity return) taking into account credit balances on bank accounts, insurance proceeds received as a result of the default, hedging gains and the realisable market value of specified assets. | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default.<br>The lenders will be able to enter into direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a Private Partner default. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately assign the project documents to a suitable substitute concessionaire. | The Government stands behind payments as a result of breach by the Contracting Authority.<br>The Government agreements do not terminate and shall remain in force for so long as any payments are due but not yet paid by the Contracting Authority in relation to termination for Government default. | The Private Partner will generally be protected if the power purchase agreement is terminate due to a reason beyond the control of the Private Partner. The levels of compensation payable will differ depending upon the event. |

# Risk Matrix 7: Hydro power (BOOT)

- A new large-scale (greater than 100 MW) hydroelectric power project, developed as a BOOT transaction, where the power is being sold to a state-owned single buyer
- Contracting Authority nominates location for power plant
- Key risks:
  - Environmental and social risk
  - Resource or input risk
  - Land purchase and site risk

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | X | | The Private Partner bears full responsibility for the suitability of the project site, including geological, geotechnical, archaeological conditions.<br>The Private Partner is obliged to obtain and maintain the peaceful use and possession of the project site, as well as all requisite access rights and servitudes that might be required.<br>The Private Partner bears full responsibility to procure the construction, operation and maintenance of the facility in accordance with all laws and consents and accordingly, bears full responsibility for obtaining all environmental permits, consents and licenses. | The Private Partner should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the facility.<br>The Private Partner should engage with the community on social, environment, planning and land acquisition issues at an early stage. The land requirements for hydro can be significant and may involve the relocation of communities.<br>The Private Partner may seek to pass the site risk down to the EPC contractor and in terms of the lease agreement (if applicable), to the extent possible.<br>The Private Partner must ensure that the construction and/or operating contractor complies with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | Generally, neither the Government authority nor the Contracting Authority has an obligation to facilitate the issuance of the required permits or consents, nor does it have any obligations in relation to assisting with securing the site. However, it will likely have a facilitating role to play in relation to environment, planning and social issues, given the large land needs of hydro projects and the impacts on local communities.<br>The exception will be where the project requires new transmission lines to be constructed; construction of transmission lines will be done by the contract authority, but at the costs of the Private Partner. In such case, the Contracting Authority will be responsible for securing the right of ways required for construction of the transmission lines. | Land rights and ground conditions (in particular reliable utilities records and land charges) in developed markets are typically more established than emerging markets, and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution. | Emerging | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interest for the project and manage indigenous land issues and engagement with local communities.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed or warranted and disclosed to the Private Partner.<br>Typically, the Contracting Authority will | The Contracting Authority should undertake detailed ground and environmental assessments and should disclose such information to project bidders as part of any tender process.<br>The Contracting Authority should:<br>(1) aim to have a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and | The Contracting Authority will likely be responsible for handling land acquisition, social issues and unforeseen risks and will be required to remove and/or handle such risks as they arise with minimal disruption to the Private Partner's operations.<br>The Contracting Authority may need to use its legislative powers to secure the site (e.g. | Land rights and ground conditions (in particular reliable utilities records and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist. Land ownership may not be formally established and registered and substantial delays may be suffered.<br>In the absence of legislation in emerging markets, |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | Latent defects. | | | | | provide a non-exclusive licence, rights of use and access to the lands as is required and sufficient for the Private Partner to perform its obligations, however, the Private Partner will not receive any right, title or ownership interest in the lands.<br>The Private Partner will agree to accept the site condition on an 'as-is' basis subject to the Contracting Authority's disclosure of any relevant defects. The Contracting Authority will often assume responsibility for any further unforeseen or undisclosed risks, such as contamination, endangered species, items of geological, historical or archaeological value. | operation of the project;<br>(2) provide reliable data on the site, which will allow the Private Partner to assess site risk; and<br>(3) manage any indigenous land rights issues that may impact on the use of the site.<br>These issues can be significant since hydropower projects often involve the relocation of communities. | through expropriation / compulsory acquisition). | indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. |
| Environmental and social risk | The risk of damage to the environment or adverse impact on local communities. | Developed | | X | | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project.<br>The Private Partner will retain responsibility for social impacts which are unavoidable as a result of the development of the project (e.g. compensation relocation of urban communities / businesses). | The Private Partner must ensure that the construction and/or operating contractor complies with any applicable permits and consents by way of the inclusion of corresponding obligations in the construction contracts. | Developed markets usually have fully functioning regulators and other Government or quasi-Government bodies to act as watch dogs for the Private Partner's compliance with environmental and social regulation. | Environmental and social regulation as well as public scrutiny is advanced in developed markets, as Private Partners and Contracting Authorities come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |
| Environmental and social risk | The risk of damage to the environment or adverse impact on local communities. | Emerging | | X | | Where the Contracting Authority dictates the location of the power plant, the Private Partner will (subject to full disclosure by the Contracting Authority of all facts known to it) usually have responsibility to accept the project site on an "as is" condition and manage the environmental and social strategy across the project, as well as obtaining all required licences, permits and authorisations as necessary. Where the procurement process gives the Private Partner latitude to select the optimal location for the power plant this risk will be fully allocated to the private sector.<br>Social impacts on local communities will be managed by the Private Partner under the oversight of the Contracting Authority. | The Contracting Authority should conduct prior due diligence in order to ascertain the environmental fitness of the site and disclose all data to the Private Partner. In practice the Contracting Authority in an emerging market will often not have the capability to undertake this task and therefore some of the work may need to be carried out by the Private Partner even if certain risks remain allocated to the Contracting Authority.<br>The Contracting Authority will expect to approve all environmental plans of the Private Partner. | In view of the sensitivity of the environmental and social issues associated with large hydro projects (especially where the project may include the construction of a dam/reservoir) even if management of these issues rests with the Private Partner the host Government will have a significant role to play in facilitating initiatives at local level to explain the benefits of the project it is promoting. | Environmental and social regulations are often less developed in emerging markets than those in developed markets. However, the participation in the project by International lenders and development finance institutions will oblige the Private Partner to comply with more onerous international standards. International lenders are sensitive about environmental and social risks, as evidenced by their commitment to the Equator Principles. They will look closely at how these risks are managed and this scrutiny is helpful to mitigate the risks |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | | | posed by these issues. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the facility and its compliance with the output / performance specification.<br>Any changes to the design after being awarded as a preferred bidder requires the consent of the Contracting Authority, although the Contracting Authority takes no responsibility for the inaccuracy of the design or the risk of delays in approving any changes. | Pass through obligations to the construction contractor and project relief principles equivalent to those set out in the power purchase agreement will need to be incorporated into the EPC contract.<br>The Private Partner may seek to be prescriptive with the EPC contractor regarding the output specification. It may seek a degree of cooperation and feedback during the development phase to ensure that an appropriate risk allocation for design responsibility is reached when finalising the output specification. | | Contracting Authorities take little or no design risk in emerging or developed markets, however, Contracting Authorities in emerging markets are more prescriptive about the required specification. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the power plant. Whether or not the Contracting Authority is concerned with the way in which the plant is designed, or merely with the output / performance of the plant, will depend on whether the plant is be transferred by the Private Partner at the end of the concession period.<br>For a BOOT project the Contracting Authority will be more concerned with the detail of the specification as it will be thinking ahead to the time when it takes over the plant. However, it needs to be careful not to intervene unduly, as this can lead to the Private Partner seeking to limit its liability on the basis that its control of the project has been fettered by the Contracting Authority.<br>The Contracting Authority may be more prescriptive regarding design for hydroelectric projects within a cascade, where efficiency of the system as a whole should be maximised. | Where the project is competitively tendered the Contracting Authority will typically specify the outputs required from the plant and, subject to ensuring compliance with applicable legal requirements and good industry practice standards, leave bidders to innovate in the design.<br>Failure to get the minimum functional specification right for the project effectively transfers risk back to the Contracting Authority. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation (see also completion (including delay and cost overrun) risk with respect to commissioning). | Contracting Authorities take little or no design risk in emerging or developed markets, however, Contracting Authorities in emerging markets are more prescriptive about the required specification. |
| Construction risk | Labour dispute.<br>Interface/project | Developed | | X | | Private Partner assumes all these risks, except where certain construction work is | These risks can be mitigated through various means, | The Contracting Authority (and the lenders) will | The Private Partner takes construction risk in developed |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | | | | | dependent on Contracting Authority work/related infrastructure work (e.g. transmission lines) being completed. | including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence processes and by way of the security provisions in the relevant documentation.<br>The power purchase agreement will also include limited rights to extend completion date and the right to terminate if the facility is not operational by a nominated longstop date (except if caused by Contracting Authority assumed risk).<br>The Private Partner shall seek to pass these risks to the contractors under the EPC contract. | have inspection, review and approval rights prior to the plant entering into commercial operations. | and emerging markets. In developed markets, Contracting Authorities have less involvement in the construction process. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | Private Partner assumes all these risks, except where certain construction work is dependent on Contracting Authority work/related infrastructure work (e.g. transmission lines) being completed.<br>Private Partner takes labour dispute risk unless political in nature. | The Private Partner shall seek to pass these risks to the contractors under the EPC contract or O&M contract, as the case may be. Also, certain risks can be further mitigated through insurance. | | The Private Partner takes construction risk in developed and emerging markets. However in emerging markets, the Contracting Authority has more oversight, design approval rights and ability to witness commissioning and testing than in developed markets. Private Partners in emerging markets are able to share a greater degree of risk with the Contracting Authority in respect of politically motivated force majeure events that impact construction. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br><br>The principal risk arising out of delay will be a delay liquidated damages payable to the Contracting Authority under the power purchase agreement, termination of the power purchase agreement after, loss of expected revenue, ongoing costs of financing construction and extended site costs.<br><br>A schedule COD is fixed under the power purchase agreement. Failure to commence the commercial operation within the scheduled COD will result in the Private Partner being subject to delay liquidated damages, calculated on a daily basis and paid by deduction of a performance security placed with the Contracting Authority. Once the performance security has been fully deducted, and the facility has still not commenced its commercial operation, the power purchase agreement may be terminated.<br><br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of parts, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br><br>The Private Partner will be expected to demonstrate adequate system performance before it is allowed to fully operate the system. | Generally, the Private Partner will seek to pass risks associated with delay in achieving commercial operation on to the EPC contractor in order to minimise potential impact on the project. EPC Contracts will often contain liquidated damages and financial penalties and can assist in enforcing construction deadlines.<br><br>Typically, the amount of the delay liquidated damages to be paid by the EPC contractor under the EPC Contracts will factor in the delay liquidated damages which the Private Partner is required to pay to the Contracting Authority under the power purchase agreement and the financing costs of the project during the period of the delay.<br><br>In relation to commissioning and connection to the grid, the EPC contract should contain an obligation that the EPC contractor design and construct the facility so as to be compliant with the relevant codes (as required in terms of the relevant Government agreements) and that the EPC contractor assists the Private Partner in providing the information required to evidence compliance with the codes (as defined in the relevant Government agreement). | The Contracting Authority may allow for certain relief where delays have arisen from either the fault of the Contracting Authority or the grid operator. | Achievement of construction deadlines may be easier as permitting delays are less likely and Contracting Authorities are likely to have greater experience and available resources to meet their obligations. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor. | A power plant can only complete commissioning and achieve commercial operation if it is able to full test the plant by exporting electricity to the grid. | An independent engineer is sometimes appointed by the Private Partner to act on behalf of the Contracting Authority in monitoring the Private | Some emerging markets hydro projects have faced significant construction issues and the parties will need to be prepared to enforce their respective rights to manage |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | two criteria. | | | | | The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>Generally, the Private Partner is must reach the commercial operation date no later than 180 days after the Scheduled COD and failure to reach this target allows the Contracting Authority to terminate the PPA.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning of parts, despatching and operations, and preventative and lifecycle maintenance to ensure a reliable and punctual service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected to demonstrate adequate system performance before it is allowed to fully operate the system. | To minimise uncertainty a Private Partner will often take responsibility for building connection facilities with the grid, even if these are handed over to the host utility after construction.<br>The Government agreements contain (i) a hard wired date by which the Private Partner must commence and continue construction after signature of the PPA and (ii) the implementation of a longstop date (180 days post scheduled COD) which creates the tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its responsibilities in spite of delays before the Contracting Authority can terminate the Government agreements.<br>Generally, the Private Partner will seek to pass risks associated with delay in achieving commercial operation on to the EPC contractor in order to minimise potential impact on the project. EPC Contracts will often contain liquidated damages and financial penalties and can assist in enforcing construction deadlines. Private Partners often build in a degree of flat or buffer between the scheduled COD under the EPC contract and the scheduled COD under the power purchase agreement. | Partner's compliance with the relevant construction milestones and the completion of the facility.<br>The independent engineer, on behalf of the Contracting Authority plays a critical role during the various stages of construction and the testing and commissioning process in terms of ensuring that the Private Partner reaches completion before or as close as possible to the scheduled COD.<br>The Contracting Authority will have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority may allow for certain relief events or cost overruns have arisen from either the fault of the Contracting Authority or a host country utility, or natural force majeure events affecting the Contracting Authority.<br>If the Contracting Authority is required to build significant transmission facilities, the issue of delayed completion and ability to pay deemed commissioning payments to the Private Partner is a key risk. | the consequences of a failure to meet the construction milestones. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | **Market Comparison Summary** |
| | | | | | | | | The Contracting Authority's obligation to make deemed commissioning payments may need to be secured by a Government guarantee. | |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | x | | The Private Partner bears the risk of setting and meeting the performance specification in the power purchase agreement.<br>The Private Partner will be paid based on the actual amount of power sold under the power purchase agreement. If the facility runs at a lower capacity than initially intended, it will effectively result in less payment received by the Private Partner. | The Private Partner will mitigate its risk through the terms of the EPC and O&M contracts with third parties. EPC contractors will typically be obliged to pay liquidated damages where tested capacity and efficiency are short of guaranteed levels. Operation and maintenance contractor are also often penalised for poor performance, but noting that limits on liability may be modest compared to the loss that may be suffered. | | Availability/capacity risks will generally be considered manageable through pass down to experienced subcontractors.<br>The Private Partner receives will generally receive no "political" force majeure protection. |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements<br>Health and safety vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Emerging | | x | | Having negotiated and signed the power purchase agreement the Private Partner bears the risk of achieving the availability and capacity levels specified.<br>The Private Partner may be liable for liquidated damages if the plant fails to meet the minimum contracted capacity. This compensates the Contracting Authority for the reduced benefit from the river resource.<br>The Contracting Authority will generally bear the risk of political force majeure, defaults by the Contracting Authority or Government parties or force majeure affecting the Contracting Authority. Where performance has been interrupted by these events, the Private partner can expect deemed energy payments. | The Private Partner will mitigate its risk through the terms of the EPC and O&M contracts with third parties. EPC contractors will typically be obliged to pay liquidated damages where performance levels are short of guaranteed levels. Operation and maintenance contractor are also often penalised for poor performance, but noting that limits on liability may be modest compared to the loss that may be suffered. | The Private Partner will expect host country/"political" force majeure protection in respect of events which might reduce availability. | Additional availability adjustments may be required in respect of political force majeure and natural force majeure events affecting the Contracting Authority. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure sufficient water flow for the project. | The Private Partner will be required by its lenders to justify its hydrology assumptions based on several years of hydrology data collection and probability analysis of water | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | levels. | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | X | | | The nature of the risk will vary, depending on whether the project is run-of-river or a dam. But in either case it is to be expected that the reliability of the water supply will be assessed by reference to historical records which should have been maintained over a long period of years by the host country. If detailed and accurate records exist a Private Partner may accept the risk. In many cases, data of this nature has not been collected or maintained for a sufficient period of time. There are other issues which can also make this risk difficult for a Private Partner to bear – for instance, if there is a possibility that the host country could take actions upstream of the power plant location which would affect the water supply ( e.g. granting concessions for other power projects). | The Private Partner can mitigate any element of hydrology risk by providing in the power purchase agreement that non-availability of water will not be a contract default and it should still be paid availability payments. | Monthly payments to the Private Partner may include certain calculations that could alleviate this risk – e.g. deemed availability payments. | Emerging markets are generally more likely to host hydro projects in situations where there is inadequate hydrology data and/or a shortage of water could be an imminent risk. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Developed | | | X | The Contracting Authority will take the principal role in managing the demand risk, but a degree of risk may be shared with the Private Partner. The power purchase agreement will contain a volume of firm energy on a take or pay basis. That volume will be sufficient to secure the long term revenue stream to ensure repayment of the debt financing. | As it will be absorbing the principal demand risk, the Contracting Authority should do a full assessment of demand risks. The Private partner will model their base case on the firm energy and run upside projections on the excess energy that may be dispatched. | Generally no Government support would be required. | The volume of firm energy is likely to be lower than in an emerging market. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users. | Emerging | X | | | Contracting Authority will have primary responsibility to manage the demand risk. | As it will be absorbing this demand risk, the Contracting Authority should do a full assessment of demand risks. | Depending on the credit rating of the Contracting Authority, Government support may be required to guarantee the take or pay payments to the Private Partner, as well as a put option should the Contracting Authority default and the power purchase agreement is terminated. | Commonly, the project's energy output is contracted on a take or pay basis for base load. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for | Developed | | X | | The Private Partner will have responsibility for maintenance necessary to ensure performance standards are met. | The power purchase agreement will contain a tariff mechanism under which part of the payment will be fixed by reference to the | | The market standard is for the Private Partner to take maintenance risk in order to ensure that specified |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | | | | | The Private Partner generally assumes the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work. | plant meeting or exceeding an availability performance standard. This mechanism will allow for the plant to reduce/shut down generation for a certain number of days each year to carry out planned maintenance. The maintenance risk can also be partially passed through from the Private Partner to the O&M contractor and/or long term service agreement provider. | | standards and outputs are met. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have responsibility for maintenance necessary to ensure performance standards are met.<br>The Private Partner generally assumes the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work. | The power purchase agreement will contain a tariff mechanism under which part of the payment will be fixed by reference to the plant meeting or exceeding an availability performance standard. This mechanism will allow for the plant to reduce/shut down generation for a certain number of days each year to carry out planned maintenance. The maintenance risk can also be partially passed through from the Private Partner to the O&M contractor and/or long term service agreement provider. | | The market standard is for the Private Partner to take maintenance risk. In emerging markets, build, operate, transfer (BOT) projects are more common than in developed markets. Where the plant will transfer at the end of the term of the power purchase agreement, the Contracting Authority is generally more concerned with the standard of maintenance and may impose warranties as to the condition of the plant at the time of handover. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and a fairly well developed list of events entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) natural disasters; or (v) discovery of any species-at-risk, fossils, or historic or archaeological artefacts that require the project to be abandoned.<br>The Private Partner takes the risk of force majeure that prevents or delays generation or receipt of energy by the Contracting Authority. Whilst the Private Partner will be excused from default, it will not receive revenue if it is unable to | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. | | The Private Partner is not typically entitled to compensation from the Contracting Authority and will also look to insurance to manage this risk. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | generate. | | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and a fairly well developed list of events entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or civil disturbance; (ii) strikes; (iii) natural disasters. In addition change in law, lapse of consents and acts or omissions by Governmental authorities are included within the definition of force majeure. However, this latter group of politically motivated events are treated separately for risk purposes. See political risks.<br>In emerging markets, the Contracting Authority often takes the hydrology risk and abnormal water levels (outside of the plant's design parameters) will be considered as a force majeure event.<br>The Private Partner takes the risk of force majeure that affects the Private Partner or its contractors and prevents or delays generation. Whilst the Private Partner will be excused from default, it will not receive revenue if it is unable to generate. It may, however, be entitled to an extension of the term of the power purchase agreement.<br>The Contracting Authority generally takes the risk of force majeure affecting it or the grid and prevents the Contracting Authority taking delivery of the energy that the Private Partner was capable of producing. The Contracting Authority pays for energy deemed to have been generated in these situations. There may be a degree of risk sharing as to the amount of payment. | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. | Generally speaking, where parties are unable to agree on a way forward following a force majeure event affecting the Contracting Authority, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner 's debt obligations during the course of the event. Where the project is terminated, the Contracting Authority may be required to fully compensate the Private Partner for debt owed to the lenders. | The Contracting Authority often does not provide compensation for termination arising from a "natural" force majeure affecting the Private Partner, on the grounds that this should be insured. But it will compensate for "natural" force majeure affecting the Contracting Authority or political/host country events. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Developed | | X | | The Private Partner bears all exchange rate and interest rate risk.<br>The Contracting Authority does not assume any risk in relation to the devaluation of local currency. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | | The tariff is denominated in local currency. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project. | Emerging | | | X | The Private Partner bears all interest rate risk.<br>The Contracting Authority often assumes the currency risk in relation to the capacity payment, which is often denominated in US dollars. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. Exchange rate risk mitigation can be achieved by having a tariff split into 2 currency components, with a local currency element reflecting the proportion of works the Private Partner can source in-country. | The Government may be expected to provide guarantees regarding currency convertibility and ability to repatriate capital and dividends. | The tariff is often denominated in US dollars. Sometimes the devaluation of local currency beyond a certain threshold acts as a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | X | | The Private Partner is responsible for taking insurance for the project at its own expense. The power purchase agreement is silent on the requirement with respect to insurance that the Private Partner is required to undertake. The insurance requirements will normally be stipulated by the lenders providing financing for the project under the Finance Documents. | The Private Partner should engage an insurance advisor to advise them on the insurance arrangement required for the project. | | The Contracting Authority generally takes no risk of uninsurability. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | The Private Partner has an obligation to insure at its own expense, as may be required by law and the standards of a reasonable and prudent operator (as defined). The Private Partner has an additional obligation to ensure that its contractors are similarly insured.<br>The Government agreements are generally silent on the remedy in relation to insurance where insurance for a particular risk is unavailable, but the insurance is still required by law or would general be required in accordance with the standards of a reasonable and prudent operator.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project and should raise this with the Contracting Authority and the funders to the project.<br>Replacement of insurances is often addressed as part of the financing negotiations with commercial lenders, where we see the development of schedules of insurance which are indicative of insurance required by law and the standards of a reasonable and prudent operator (as defined). | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | | X | | Political risk events are often included within the definition of force majeure, which relieves the Private Partner from default. However, the Private Partner is generally not entitled to deemed energy payments where it has been unable to generate because of political risk events. | Investors and commercial lenders may be able to cover themselves by using political risk or terrorism insurance.<br>Bilateral investment treaties may provide a degree of protection for expropriation.<br>The participation in the project of export credit agencies, multilaterals, domestic investors (debt, equity or capital markets) provides a degree of comfort that a political solution may resolve political risk issues that arise. | | Generally there is little protection offered for political risks. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority takes the risk for set of political related events that are included within the definition of force majeure. They consist of (i) change in law, (ii) refusal or lapse of consents, and (iii) acts or omissions of Governmental authorities. The Contracting Authority takes the risk in the following ways: (i) by making deemed energy payments to the Private Partner where it is unable to generate due to such a political risk, (ii) adjusting the tariff to compensate for any additional costs incurred and (iii) where the PPA is terminated a result of a political risk, the Contracting Authority is obliged to purchase the plant by paying a purchase price adequate to cover debt, equity and some return on equity. | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this.<br>Investors and commercial lenders may also be able to cover themselves by using political risk or terrorism insurance. | Depending on the credit rating of the Contracting Authority, Government support may be required to guarantee the deemed energy payments to the Private Partner, as well as termination payment under the power purchase agreement.. | Political risk is allocated to the Contracting Authority in emerging markets. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law mostly sits with the Private Partner.<br>Change in law is often included within the definition of force majeure, which relieves the Private Partner from default. However, the Private Partner is generally not entitled to deemed energy payments where it has been unable to generate because of a change in law.<br>Where the change in law increases the private Partner's costs, adjustments to the tariff (if any) are often dependent on the Contracting Authority's ability to | The tariff may be subject to a market indexation mechanism, which provides a degree of protection against changes in law that have a material impact on that market index. | | Contracting Authorities assume little risk for change in law. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | recover the change in law through the end user tariff. Alternatively, the term of the power purchase agreement may be extended to allow the Private Partner the opportunity to recover the extra costs arising from the change in law. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | | | X | In emerging markets without a previous track record of private participation in the power sector, the Contracting Authority takes change in law risk for all changes in law, subject to de minimis thresholds.<br>However, as an emerging market's private power industry matures, the risk of change in law will be shared as follows:<br>The Private Partner can expect to be protected against changes in law which are: (i) discriminatory (to the project or the Private Partner) (ii) targeted at the power sector). But even such change in law protection may be subject to a de minimis threshold before the Private Partner is entitled to compensation. The Private Partner will not be compensated for general changes in law which as the name suggests are of general application to a whole country e.g. changes in general income taxes.<br>Changes in law typically result in an adjustment to the tariff so that the original economic basis of the transaction is preserved. This adjustment reflects both increased costs and savings. In theory this means that the tariff may be adjusted in the Contracting Authority's favour.<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it.<br>The Contracting Authority has an obligation to use all reasonable endeavours to minimise and mitigate the effects of any change in law. | Depending on the credit rating of the Contracting Authority, Government support may be required to guarantee the energy payments to the Private Partner, as well as termination payment under the power purchase agreement where change in law has rendered performance of the power purchase agreement illegal. | The Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change and to attract investors. Emerging markets may provide protection for all changes in law, with the possible exception of taxes. |
| Inflation risk | The risk that the costs of the project increase | Developed | X | | | On availability-based projects, during the term of the power purchase agreement, | End user tariffs tend to adjust for inflation. | | Inflation is typically minimal and does not experience |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | more than expected. | | | | | the availability payment will typically include fixed and variable components. The fixed and variable components linked to operation and maintenance costs are indexed for inflation. | | | fluctuations to the extent of emerging markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the operation period will typically be primarily borne by the Contracting Authority.<br>On availability-based projects, during the term of the power purchase agreement, the availability payment will typically include fixed and variable components. The fixed and variable components linked to operation and maintenance costs are indexed for inflation. There may be foreign and local operation and maintenance components which are indexed to US CPI and local CPI respectively. | To a lesser extent than developed markets, end user tariffs reflect a degree of inflationary adjustment. | Depending on the credit rating of the Contracting Authority, Government support may be required to guarantee the energy payments to the Private Partner, including any elements of such payments that are indexed for inflation. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the term of the power purchase agreement. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Change of control will often be prohibited or limited until the commercial operation date or a specified period thereafter. | When structuring the project company, the Private Partner may consider using a holding company structure whereby the shares in the project company are held by a holding company. Any change of transfer of interest in the project can then be done at the level of the holding company. | | Developed markets tend to be less restrictive on shareholding changes than emerging markets. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Share transfers are often prohibited until five years after the commercial operation date and thereafter the lead shareholder may be required to maintain a majority shareholding for a specified period thereafter. In addition to requirements under the power purchase agreement, the shareholders may make direct undertakings to the Contracting Authority. | When structuring the project company, the Private Partner may consider using a holding company structure whereby the shares in the project company are held by a holding company. Any change of transfer of interest in the project can then be done at the level of the holding company. | | Contracting Authorities in emerging markets tend to have a greater degree of control over shareholding changes for a longer period of time than developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces established technology used in large scale | Developed | | X | | Power purchase agreements do not address the issue of disruptive technologies. To the extent that the Contracting Authority agrees to purchase a firm quantity of energy on a take or pay | The Contracting Authority needs to be cognisant of potential disruptive technologies when planning the generation portfolio | | Contracting Authority assumes the risk of disruptive technologies. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | hydro projects. | | | | | basis, the Contracting Authority assumes the risk that disruptive technologies may render alternative forms of generation more attractive.<br>Even where the Private Partner does not have a firm energy commitment, in a grid which contains conventional forms of fuel based generation, hydro generation's position in any merit order dispatch insulates the Private Partner from the risk that it will not be dispatched by the Contracting Authority. | for the grid. | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces established technology used in large scale hydro projects. | Emerging | X | | | The Contracting Authority bears the risk of obsolescence. The power purchase agreement does not specifically deal with the issue, but the take or pay commitment ensures the Private Partner continues to be paid regardless of whether emerging technology makes alternative generating sources more attractive. | The Contracting Authority needs to be cognisant of potential disruptive technologies when planning the generation portfolio for the grid. | Take or pay commitments by Contracting Authorities with a poor credit rating are often backed by Government guarantee. | Contracting Authority assumes the risk of disruptive technologies. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Developed | | | X | Where termination arises from a party's default, the defaulting party may be obliged to pay damages based on a mark to market assessment of the losses. Generally, however, the parties do not specify the calculation of termination payments and they preserve their rights to claim damages at law. For breach of the power purchase agreement. Generally, there are no termination payments where termination arises from force majeure, including political risk. | The Private partner may be able to mitigate its losses through insurance. Where the plant is able to generate, the Private Partner may be able to mitigate its losses by selling the energy produced to a spot market or an alternate buyer. | | The early termination risk is more evenly shared between the parties, then the emerging market. Termination for default will give rise to a claim for damages for breach of the power purchase agreement. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination. | Emerging | | | X | The principal risk is born by the Contracting Authority.<br>The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default, force majeure affecting the Contracting Authority and political force majeure – the Contracting Authority is obliged to purchase the plant and the Private Partner would be entitled to compensated for senior debt, junior debt, equity and a level of equity return for a specified period; | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default.<br>Political risk insurance may be available to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. | The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, | The Contracting Authority makes comprehensive liquidated termination payments for its own default, political force majeure and natural force majeure affecting the Contracting Authority. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | (2) Private Partner default – the Contracting Authority would have the option to purchase the plant and if exercised, it would compensate the Private Partner for the senior debt; and<br>(3) Natural force majeure affecting the Private Partner – often no obligation on the Contracting Authority to purchase the project.<br>It is common for the senior debt to be guaranteed as a minimum in every termination scenario where the plant is transferred to the Contracting Authority. | | manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire.<br>Depending on the credit rating of the Contracting Authority, Government support may be required to guarantee the termination payments under the power purchase agreement. | |

# Risk Matrix 8: Power transmission (BOOT)

- New power transmission project, developed as a Build-Own-Operate-Transfer transaction with availability-based payments
- Assumes the Contracting Authority owns and operates the existing electric system in which the new transmission facilities will be built and interconnected
- Project scope may include associated infrastructure, such as substations
- Assumes Contracting Authority could issue functional specification which would permit a variety of technical solutions (e.g. different conductor and tower configurations)
- Key risks:
  - Land purchase and site risk
  - Environmental and social risk
  - Disruptive technology risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | | X | The Contracting Authority will generally bear the principal risk and is best placed to select and acquire the required land interests for the project. That said, there may be some cases where the Private Partner will bear such risks, particularly in jurisdictions with well-developed administrative processes which provide access to lands with relative cost certainty.<br>The Contracting Authority will generally bear the risks associated with unforseen geophysical conditions, archaeological discoveries, heritage discoveries, pollution and latent defects. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to be held by the Contracting Authority.<br>On the other hand, the Private Partner may be expected to address certain restrictive land title issues and otherwise address the concerns of existing utilities. | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the tender, the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even with a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. | Land rights and ground conditions (in particular reliable utilities records and land charges) in developed markets are typically more established than emerging markets, and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | | | X | The Contracting Authority will generally bear the principal risk and is best placed to select and acquire the required land interests for the project. That said, there may be some cases where the Private Partner will bear such risks, particularly in jurisdictions with well-developed administrative processes which provide access to lands with relative cost certainty.<br>The Contracting Authority will generally bear the risks associated with unforseen geophysical conditions, archaeological discoveries, heritage discoveries, pollution and latent defects. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to need to | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the system.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even with a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. | Land rights and ground conditions (in particular reliable utilities records and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist.<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | be held by the Contracting Authority.<br>On the other hand, the Private Partner may be expected to address certain restrictive land title issues and otherwise address the concerns of existing utilities. | Prior to awarding the tender, the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | | are available to the project. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Developed | | X | | The Private Partner takes the risk of existing environmental and other conditions which the Contracting Authority has disclosed or which are discoverable by the exercise of reasonable due diligence prior to the Private Partner accepting the project route (or prior to the Private Partner obtaining an approved route), and the Contracting Authority retains the risk of existing latent environmental and other conditions.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority. | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may need to be contractualised. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins.<br>International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities. | Emerging | | X | | The Private Partner takes the risk of existing environmental and other conditions which the Contracting Authority has disclosed or which are discoverable by the exercise of reasonable due diligence prior to the Private Partner accepting the project route (or prior to the Private Partner obtaining an approved route), and the Contracting Authority retains the risk of existing latent environmental and other conditions.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority. | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may need to be contractualised. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design | The Contracting Authority will often broadly draft the Private | | Developed market transmission projects benefit |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | | | | | of the system and its compliance with the functional and performance specifications.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the functional specification.<br>If the functional specification is too prescriptive (e.g. the required route corridor or specified conductor or tower type constrains 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.<br>If the project is being integrated into an existing interconnected electricity transmission system, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted (in that it will not be able to warrant defects in the existing interconnected electricity transmission system that may impact performance).<br>A feasibility study is relevant for most projects. Such studies provide the design / cost analysis to determine the viability of the project.<br>Delay in approving designs Contracting Authority risk.<br>Changes to design depend on reason for change – if the original design is deficient this will be a Private Partner risk or if the change is required by Contracting Authority this may be a Contracting Authority risk. | Partner's design and construction obligations to satisfy the functional specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the design.<br>A design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner; however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability. | | from defined design standards which allow for increased innovation and productivity gains. The quality of the information provided by the Contracting Authority and limited ability to verify such data can also hinder the Private Partner's ability to unconditionally take full design risk. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for adequacy of the design of the system and its compliance with the functional and performance specifications.<br>The Contracting Authority may retain some design risk in certain aspects of the system or related works, depending on how prescriptive the Contracting Authority is in the functional specification.<br>If the functional specification is too | The Contracting Authority will often broadly draft the Private Partner's design and construction obligations to satisfy the functional specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | prescriptive (e.g. the required route corridor or specified conductor or tower type constrains 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.<br>If the project is being integrated into an existing interconnected electricity transmission system, the Private Partner's ability to warrant the fitness for purpose of its design solution may be impacted (in that it will not be able to warrant defects in the existing interconnected electricity transmission system that may impact performance).<br>A feasibility study is relevant for most projects. Such studies provide the design / cost analysis to determine the viability of the project.<br>Delay in approving designs is a Contracting Authority risk.<br>Changes to design depend on reason for change – if the original design is deficient this will be a Private Partner risk or if the change is required by Contracting Authority this may be a Contracting Authority risk. | efficiency gains in the design.<br>A design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner; however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability. | | |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes all construction risks.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence processes and by way of the security provisions in the relevant documentation. | The Contracting Authority (and the lenders) will have inspection, review and approval rights in relation to the design and the manufacture, installation and erection of plant and materials on and off the site. | Associated risks that can affect construction costs, such as inflation, should also be considered. The Private Partner will generally price in this risk in economies where such risk can be projected and quantified.<br>Turnkey construction contracts and guaranteed completion dates, costs, and performance standards are often negotiated during project development. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | The concession agreement will also include limited rights to extend completion date, the right to terminate if the facility is not operational by a nominated longstop date (except if caused by Contracting Authority assumed risk) and step in rights for the Contracting Authority. | | |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | The Private Partner assumes all construction risks.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence processes and by way of the security provisions in the relevant documentation.<br>The concession agreement will also include limited rights to extend completion date, the right to terminate if the facility is not operational by a nominated longstop date (except if caused by Contracting Authority assumed risk) and step in rights for the Contracting Authority. | The Contracting Authority (and the lenders) will have inspection, review and approval rights in relation to the design and the manufacture, installation and erection of plant and materials on and off the site. | In emerging markets, the Contracting Authority often has the right to step into the project to remedy chronic or emergency situations and also to engage a replacement contractor to rectify, remedy or address any issues, during the construction (and operation) phase. |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk to the Private Partner arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs. | The Contracting Authority will usually wish to implement a single-stage completion process for energizing the transmission facilities. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely | In developed markets, enforcement of construction deadlines and budgets may be easier than in emerging markets as the Private Partner will typically have more experience and reliable resources, and will be more confident in its ability to enforce its rights. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | The Private Partner is best placed to integrate the construction, energization 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.<br>The Private Partner will be expected to demonstrate readiness for energization before it is given permission to energize and operate the facilities. | "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project. | delay the project.<br>The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time (depending on whether such risk has been assumed by the Contracting Authority or the Private Partner). | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk to the Private Partner arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>The Private Partner is best placed to integrate the construction, energization 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.<br>The Private Partner will be expected to demonstrate readiness for energization before it is given permission to energize and operate the facilities. | The Contracting Authority will usually wish to implement a single-stage completion process for energizing the transmission facilities. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time (depending | Projects in emerging markets may face 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 an emerging market context, the dynamics may be different if the lenders have a significant underwrite of their senior debt. Ensuring a realistic time frame at project out set rather than an ambitious or desired time frame may save time and money for all parties in the long run. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | on whether such risk has been assumed by the Contracting Authority or the Private Partner). | |
| Performance/ price risk | The risk that the asset is able to achieve the performance and reliability metrics and the price or cost of doing so.<br>Damage pollution accidents.<br>Meeting handback requirements.<br>Health and safety Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Developed | | X | | The Private Partner bears the risk of meeting the performance and reliability specifications. However, the Contracting Authority is responsible for enforcing the regime and for ensuring that the performance and reliability specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance and reliability levels, and the appropriateness of the metrics given the nature of the project.<br>During the concession period, the Private Partner will retain care custody and control of the transmission facility and primarily bears the risks associated with damage, pollution, accidents, meeting the handback requirements, health and safety, and vandalism.<br>Since power transmission projects are availability-based, the Contracting Authority will primarily bear the risk of the transmission system operating characteristics exceeding the design parameters of the project. | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based on reliability and availability of service can be measured against pre-determined schedules or standards. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance specifications and models. |
| Performance/ price risk | The risk that the asset is able to achieve the performance and reliability metrics and the price or cost of doing so.<br>Damage Pollution Accidents.<br>Meeting handback requirements<br>Health and Safety Vandalism.<br>Equipment becoming prematurely obsolete.<br>Expansion. | Emerging | | X | | The Private Partner bears the risk of meeting the performance and reliability specifications. However, the Contracting Authority is responsible for enforcing the regime and for ensuring that the performance and reliability specifications are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance and reliability levels, and the appropriateness of the metrics given the nature of the project.<br>During the concession period, the Private Partner will retain care custody and control of the transmission facility and primarily bears the risks associated with damage, pollution, accidents, meeting the | The Private Partner may need to require the Contracting Authority to reduce the performance requirements during the settling in period and possibly readjust the performance metrics once the performance of the system, as integrated into the existing system, is better understood. This would mitigate the risk of long-term performance failure. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief or compensation. | For emerging markets, particularly in the case of market first projects, the preparation of attainable standards by the Contracting Authority may be complicated by the lack of outage and performance data pertaining to the interconnected system. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | handback requirements, health and safety, and vandalism.<br>Since power transmission projects are availability-based, the Contracting Authority will primarily bear the risk of the transmission system operating characteristics exceeding the design parameters of the project. | | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | X | | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs. | N/A | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks. | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | | X | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>There may be specific instances where the Private Partner may need the share this risk with the Contracting Authority, such as reliance on local source materials where these may be affected by labour disputes, embargos or other political risks. | N/A | The Contracting Authority may need to stand behind the cost risk for certain inputs, or at least underwrite the Private Partner's financing for these costs. | Emerging markets are generally more susceptible than developed markets to market volatility and major cost variations, and resource availability is more of a concern. |
| Demand risk | Market participant demand for the transmission facility capacity. | Developed | X | | | The default position for transmission projects is for the Contracting Authority to retain all demand risk. | As it will be absorbing this demand risk, the Contracting Authority should do a full assessment of demand risks. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic demand and load forecasts. |
| Demand risk | Market participant demand for the transmission facility capacity. | Emerging | X | | | The default position for transmission projects is for the Contracting Authority to retain all demand risk. | As it will be absorbing this demand risk, the Contracting Authority should do a full assessment of demand risks. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | It may be difficult for Contracting Authorities to develop realistic demand and load forecasts, as there is likely to be a lack of relevant comparative market data to begin with. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set out in the maintenance requirements defined by the Contracting Authority.<br>The Private Partner generally assumes | The Contracting Authority should take time to ensure that the maintenance requirements properly define the maintenance obligations on the Private Partner to ensure that the | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services | In developed markets, the involvement of the Private Partner in the operation, maintenance and rehabilitation of the project provides several benefits by |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | costs due to increased volumes.<br>Incorrect estimates and cost overruns. | | | | | the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work.<br>That being said, the Contracting Authority may retain some maintenance risk where the load (e.g. on a transformer) materially exceeds the projections of the Contracting Authority.<br>The Private Partner will also retain the principal risk with regard to incorrect estimates and cost overruns.<br>The Contracting Authority should consider including appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced availability payments).<br>The Contracting Authority will generally retain the risk associated with outages (and related maintenance) caused by other transmission facilities which are part of the same interconnected electric system. | system remains robust in the event of early termination or expiry of the agreement.<br>The primary role of the Contracting Authority is to properly define the maintenance requirements and level of services required of the Private Partner.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors.<br>The Private Partner can manage the maintenance risk by passing such risks to contractors through long term maintenance contracts which cover planned and unplanned maintenance, with adequate compensation regimes for underperformance / lack of availability of the asset. | (with the exception of minor management services) reduces the benefits of the BOOT project model.<br>The Contracting Authority may be required to guarantee and manage the maintenance of the existing interconnected transmission system. | incentivizing greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased volumes.<br>Incorrect estimates and cost overruns. | Emerging | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set out in the maintenance requirements defined by the Contracting Authority.<br>The Private Partner generally assumes the overall risk of periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work.<br>That being said, the Contracting Authority may retain some maintenance risk where the load (e.g. on a transformer) materially exceeds the projections of the Contracting Authority. | The Contracting Authority should take time to ensure that the maintenance requirements properly define the maintenance obligations on the Private Partner to ensure that the system remains robust in the event of early termination or expiry of the agreement.<br>The primary role of the Contracting Authority is to properly define the maintenance requirements and level of services required of the Private Partner.<br>Adequate performance by the Private Partner can be further | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services (with the exception of minor management services) reduces the benefits of the BOOT project model.<br>The Contracting Authority may be required to guarantee and manage the maintenance of the existing interconnected transmission system. | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | The Private Partner will also retain the principal risk with regard to incorrect estimates and cost overruns.<br>The Contracting Authority should consider including appropriate KPIs to monitor the service levels and take effective enforcement action (e.g. through penalties or reduced availability payments).<br>The Contracting Authority will generally retain the risk associated with outages (and related maintenance) caused by other transmission facilities which are part of the same interconnected electric system. | enforced by ensuring that the payment mechanism considers quality and service failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors.<br>The Private Partner can manage the maintenance risk by passing such risks to contractors through long term maintenance contracts which cover planned and unplanned maintenance, with adequate compensation regimes for underperformance / lack of availability of the asset. | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; or (iv) pressure waves caused by devices traveling at supersonic speeds.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>The Private Partner's relief in respect of force majeure events occurring during operation will, in most instances, include relief from KPI penalties. | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>The risk of disruption as a result of no-fault events may be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties). | Generally speaking, where performance is suspended or materially impacted during an event of force majeure, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, the Contracting Authority may be required to fully compensate the Private Partner for debt owed to the lenders. Whether the debt will be kept whole in such a scenario, will be a key area of focus for prospective lenders as part of their initial credit assessments. | In developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from force majeure. |
| Force majeure | The risk that unexpected events | Emerging | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events | Project insurance (physical damage and loss of revenue | Generally speaking, where performance is | In emerging market transactions, the Contracting |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| risk | occur that are beyond the control of the parties and delay or prohibit performance. | | | | | that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; or (iv) pressure waves caused by devices traveling at supersonic speeds.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>The Private Partner's relief in respect of force majeure events occurring during operation will, in most instances, include relief from KPI penalties. | coverage) is the key mitigant for force majeure risks that cause physical damage.<br>The risk of disruption as a result of no-fault events may be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties). | suspended or materially impacted during an event of force majeure, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, the Contracting Authority may be required to fully compensate the Private Partner for debt owed to the lenders. Whether the debt will be kept whole in such a scenario, will be a key area of focus for prospective lenders as part of their initial credit assessments. | Authority may not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. If this is the case then unavailability of insurance will need to be adequately addressed.<br>Other markets may provide limited cover to compensate senior debt. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Emerging | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market.<br>In certain countries this may not be possible due to exchange / interest rate volatility. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks but currency repatriation guarantees may be sought in some markets. | In emerging market projects, the devaluation of local currency beyond a certain threshold may be a trigger for non-default termination. Alternatively it could trigger a "cap and collar" subsidy arrangement from the Contracting Authority. Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. Some aspects of local currency payment may also be tied to foreign currency exposure. Many emerging markets will |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | | | offer limited protection. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks, and since neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks, and since neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable especially if Contracting Authority wishes for the project to continue. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible | The Contracting Authority will outline certain political events as delay events, compensation events and/or excusing causes | This type of issue will typically lead to a termination event where the Contracting Authority | The type of political risk events that occur in developed markets are likely more subdued and less drastic than |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | project.<br>Public sector budgeting. | | | | | should all or a portion of the project be seized or expropriated.<br>The Contracting Authority will be responsible to provide availability payments regardless of changes in public sector budgeting. | (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | will need to stand behind debt and equity. | in emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Emerging | X | | | The Contracting Authority should bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should all or a portion of the project be seized or expropriated.<br>The Contracting Authority will be responsible to provide availability payments regardless of changes in public sector budgeting. | The Contracting Authority will outline certain political events as delay events, compensation events and/or excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. It can take some Contracting Authorities time to understand and accept this risk as they may not see themselves as a 'Government entity' that can manage this risk itself but it is a question of risk allocation. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | In emerging markets, investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which: (i) are discriminatory to the project or the Private Partner (ii) are specific to the transmission sector or public-private partnership transactions, (iii) affect occupational health and safety requirements applicable the construction or operation and maintenance of transmission facilities or (iv) affect value added, sales or other taxes, other than taxes on income or capital. A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | Past concession models (including that developed 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 SOPC model had already taken this approach. Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise. | In developed markets, the Private Partner will not be compensated for General Changes and likely will have less protection than in emerging countries where Contracting Authority will be expected to bear a significant portion of the change in law risk in order to attract private investment. Such risk may be heightened in jurisdictions where the PPP legislation allows for a local assembly to veto the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | terminate as if a Contracting Authority breach had occurred. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Emerging | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which: (i) are discriminatory to the project or the Private Partner (ii) are specific to the transmission sector or public-private partnership transactions, (iii) affect occupational health and safety requirements applicable the construction or operation and maintenance of transmission facilities or (iv) affect value added, sales or other taxes, other than taxes on income or capital. A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred. | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | Past concession models (including that developed 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 SOPC model had already taken this approach. Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise.<br>Some projects may also require a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets, the Private Partner is likely to have a greater level of protection from changes in law than in developed markets, to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession | During the concession term, the Private Partner will look to be kept neutral in respect of both | The payment mechanism may account for inflation costs by incorporating the | In developed markets, inflation is typically minimal and does not experience fluctuations to |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | term will typically be primarily borne by the Contracting Authority.<br>During the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index. | international and local inflationary costs through an appropriate inflation uplift or tariff adjustment regime. | consumer price index into the monthly payments. | the extent of emerging markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority.<br>During the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index. | During the concession term, 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. | The payment mechanism may account for inflation costs by incorporating the consumer price index into the monthly payments. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved during construction and a specified period during operation.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for the construction period and for a minimum period of time thereafter, e.g. two years post energization).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In developed markets the Private Partners' 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, particularly in the equity investor markets. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved during construction and a specified period during operation.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for the construction period and for a minimum period of time thereafter, e.g. two years post energization).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In emerging markets lock-in periods and subsequent controls are typically more restrictive than in developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in | Developed | X | | | Contracting Authority bears the risk of obsolescence. | The Contracting Authority will need to be cognisant of potential disruptive technologies, such as battery storage and off-grid developments, that may impact | | Typically not dealt with. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | power transmission sector. | | | | | | long term demand for the asset. | | |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology used in power transmission sector. | Emerging | X | | | Contracting Authority bears the risk of obsolescence. | The Contracting Authority will need to be cognisant of potential disruptive technologies, such as battery storage and off-grid developments, that may impact long term demand for the asset. | | Typically not dealt with. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get the return of senior debt and equity (including junior debt) and a level of return on equity;<br>(2) Non-default termination – the Private Partner would get the return of senior debt and equity (including junior debt); and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common 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. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | In developed markets, early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Emerging | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get the return of senior debt and equity (including junior debt) and a level of return on equity;<br>(2) Non-default termination – the Private Partner would get the return of senior debt and equity (including junior debt); and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common 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. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire.<br>The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination. | There may be sovereign guarantees in emerging markets which support the Contracting Authorities payment obligations. |

# Risk Matrix 9: Natural gas distribution (ROT)

- Natural gas distribution project involving an existing distribution network for an existing utility, as a ROT project where the wholesale supplier of gas is state owned and gas tariffs are set by a regulator
- Assumes that the Contracting Authority identifies the site on which the project will be built
- Key risks:
  - Land purchase and site risk
  - Resource or input risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical and hydrological conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | | X | The Contracting Authority bears the principal risk for ensuring that the required land interests in the sites designated for the project are within its ownership or control, or that it has sufficient legal rights (contractual or statutory) over them to enable this to occur.<br>The land interests may be provided by the Contracting Authority to the Private Partner, if it has or has acquired the relevant land rights (through contract or statute), or a third party landowner who has agreed to grant the relevant land rights. As the project will be transferred to the Contracting Authority at the end of the agreed term, the land rights are usually granted to the project under lease or similar arrangements.<br>Additionally, the Contracting Authority bears the principal risk of ensuring that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Private Partner will be responsible for assessing the adequacy of the sites designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated sites may impose on the design and construction of the rehabilitation works. This will be particularly important in relation to obtaining access to the gas distribution network, including temporary occupation of sites for maintenance and laydown areas. Consideration should also be given to the need for additional gas compression facilities along the route.<br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and man-made substructures, to the extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project. This would include any pre-existing claims for contamination or compliance with environmental laws | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should also undertake detailed site surveys to identify the location of the existing assets and to confirm, or otherwise, that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Contracting Authority should allow access to the Private Partner during the bidding process to carry out its own surveys of the sites and the existing assets.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the rehabilitation and operation of the facility. This includes third party interference, whether accidental or wilful, to the pipe network.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>As this is a ROT project the risks may be mitigated because the project involves an existing distribution network. | The Contracting Authority may need to use its legislative powers to obtain and then secure the sites and easements (e.g. through expropriation / compulsory acquisition).<br>Even where there is a legally clear site, Government enforcement powers may be needed to properly secure the site for the project. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. This may particularly be the case in relation to the pipe network.<br>If the existing network has transported other fuels this may increase the need for the Contracting Authority to take the risk of remediation and delays to completion of the ROT project. | Land and access rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records. Where there are deficiencies, these can often be easily cured through the exercise of statutory powers for acquisition and access.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example the requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada.<br>In some cases the Contracting Authority may seek to pass the risk of contamination along the existing route to the Private Partner. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | and standards.<br>The Contracting Authority would also generally be responsible for compliance with planning and environmental laws and approvals as at the commencement of the term.<br>The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed by the Contracting Party.<br>The Private Partner may be required to perform its own site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br>The Private Partner may be expected to satisfy itself as to the status of any existing assets proposed to be used in the project or of any existing assets which have been identified and required to be removed or relocated.<br>Where it is not possible to fully survey prior to award and/or conduct due diligence, risk will be allocated to the Contracting Authority or shared. | | | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | X | | | The Contracting Authority bears the principal risk for ensuring that the required land interests in the sites designated for the project are within its ownership or control, or that it has sufficient legal rights (contractual or statutory) over them to enable this to occur.<br>The land interests may be provided by the Contracting Authority to the Private Partner, if it has or has acquired the relevant land rights (through contract or statute), or a third party landowner who has agreed to grant the relevant land rights. As the project will be transferred to the Contracting Authority at the end of the agreed term, the land rights are usually granted to the project under lease or similar arrangements.<br>Additionally, the Contracting Party bears | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should also undertake detailed site surveys to identify the location of the existing assets and to confirm, or otherwise, that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Contracting Authority should allow access to the Private Partner during the bidding | The Contracting Authority may need to use its legislative powers to obtain and then secure the sites and easements (e.g. through expropriation / compulsory acquisition).<br>Even where there is a legally clear site, Government enforcement powers may be needed to properly secure the site for the project. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. This may particularly be | Land and access rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist. Lenders and sponsors often have to become comfortable with wholly contractual land rights (which may be registered only through a notarisation process).<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | the principal risk of ensuring that the existing assets are located on the sites and within the easements that it owns or controls.<br><br>The Private Partner will be responsible for assessing the adequacy of the sites designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated sites may impose on the design and construction of the rehabilitation works. This will be particularly important in relation to obtaining access to the gas distribution network, including temporary occupation of sites for maintenance and laydown areas. Consideration should also be given to the need for additional gas compression facilities along the route.<br><br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and man-made substructures, to the extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project. This would include any pre-existing claims for contamination or compliance with environmental laws and standards.<br><br>The Contracting Authority would also generally be responsible for compliance with planning and environmental laws and approvals as at the commencement of the term.<br><br>The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed the Contracting Party..<br><br>The Private Partner may be required to perform its own site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br><br>The Private Partner may be expected to satisfy itself as to the status of any | process to carry out its own surveys of the sites and the existing assets.<br><br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the rehabilitation and operation of the facility. This includes third party interference, whether accidental or wilful, to the pipe network.<br><br>As this is a ROT project the risks may be mitigated because the project involves an existing distribution network. | the case in relation to the pipe network.<br><br>If the existing network has transported other fuels this may increase the need for the Contracting Authority to take the risk of remediation and delays to completion of the ROT project. | be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | existing assets proposed to be used in the project or of any existing assets which have been identified and required to be removed or relocated. | | | |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Developed | | X | | The Private Partner will have primary responsibility to accept the project site and existing assets in an "as is" condition, subject to the Contracting Authority's disclosure of relevant matters, and manage the environmental, public health and social strategy across the project, as well as obtaining and maintaining all required licenses, permits and authorisations as necessary.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or could not have been known by the Private Partner prior to commercial close may be deemed to be the responsibility of the Contracting Authority. See comments on "Land purchase and site risk" for a gas distribution project in developed markets.<br>Social risks, insofar as they may involve indigenous groups, may be the responsibility of the Contracting Authority but are often borne by the Private Partner. | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and existing assets and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority may review all environmental plans put forward by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental, public health and social risk management plans before construction begins. For example, in Australia the requirement for such plans is required by legislation.<br>Lenders are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Emerging | | | X | The Private Partner will have primary responsibility to manage the environmental, public health and social strategy across the project, however existing environmental conditions will usually to be retained by the Contracting Authority. | The Contracting Authority should conduct the necessary initial due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs. | Developed | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the rehabilitation works and its compliance with the functional / performance specification provided by the Contracting Authority. | The Contracting Authority will generally provide minimum functional / performance specifications and require compliance with applicable legal requirements and good industry practice standards.  This allows | The Contracting Authority's role may be limited to review of the design to ensure that the minimum functional / performance specifications will be able | Developed market gas distribution projects benefit from stable resource availability, robust regulatory regimes and defined design standards which allow for increased innovation and |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | Changes to design.<br>Access to necessary historic information (such as existing plans or data) | | | | | 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 connection points and gas quantity and quality. In some cases, the Contracting Authority will retain the risks associated with the condition of the existing assets as at the commencement of the term and in other cases this risk will be allocated to the Private Partner. | for private sector innovation and efficiency gains in the detailed design. In the context of a gas distribution project in an existing network it is critical that the design complies with the Gas Code, local and international quality standards as to equipment and in particular pipeline. It must also be fully compatible with the other parts of the network.<br>The Contracting Authority should take time to ensure that the minimum functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the term.<br>A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability (for example, by way of approval by the Contracting Authority) or its general freedom provided that the minimum functional / performance specifications are met. | to be met. This review will not be an approval, however, and will not limit the liability of the Private Partner. | efficiency gains.<br>It is common for such projects to attract high levels of competition from private sector investors seeking to invest in regulated assets. Private Partners and lenders will generally regard the risks associated with a ROT project as low compared to greenfield projects. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design.<br>Access to necessary historic information (such as existing plans or data) | Emerging | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the rehabilitation works and its compliance with the functional / performance specification provided by the Contracting Authority.<br>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 connection points and gas quantity and quality. In some cases, the Contracting Authority will retain the risks associated with the | The Contracting Authority will generally provide minimum functional / performance specifications and require compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the detailed design. In the context of a gas distribution project in an existing network it is critical that the design complies with the Gas Code, local and international | The Contracting Authority's role will be limited to review of the design to ensure that the minimum functional / performance specifications will be able to be met. | The quality of information provided by the Contracting Authority and limited ability to verify that data may hinder the Private Partner's ability to assume risks which would be applicable in developed markets.<br>It is common for such projects to attract high levels of competition from private sector investors seeking to invest in regulated assets. Private Partners and lenders |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | condition of the existing assets as at the commencement of the term. | quality standards as to equipment and in particular pipeline. It must also be fully compatible with the other parts of the network.<br>The Contracting Authority should take time to ensure that the minimum functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the term.<br>A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability (for example, by way of approval by the Contracting Authority) or its general freedom provided that the minimum functional / performance specifications are met. | | will generally regard the risks associated with a ROT project as low compared to greenfield projects. |
| Construction risk | Labour dispute.<br>Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes all construction risks.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence process and by way of the security provisions in the relevant documentation.<br>The concession agreement may also include limited rights to | The Contracting Authority (and the lenders) will have limited inspection, review and approval rights in relation to the design and construction of the works to the facility and the network. | In developing markets, the Contracting Authority may have the right to step into the project to remedy chronic or emergency situations, including gas quality and public health issues.<br>In developed markets construction risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | extend completion date, the right to terminate if the upgraded facility and network is not operational by a nominated longstop date (except if caused by a Government risk event) and step in rights for the Contracting Authority. | | |
| Construction risk | Labour dispute.<br>Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | The Private Partner assumes all construction risks unless the risks related to actions by the Contracting Authority or otherwise fall within force majeure, natural or political. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence process and by way of the security provisions in the relevant documentation.<br>The concession agreement will also include limited rights to extend completion date, the right to terminate if the upgraded facility and network is not operational by a nominated longstop date (except if caused by a Government risk event) and step in rights for the Contracting Authority.<br>Insurance will mitigate the impact of certain construction risks. | It is common for the Private Partner to have detailed reporting requirements which provide the Contracting Authority with regular updates as to consents and give early warning rights of any material delays. | In emerging markets, the Contracting Authority may have the right to step into the project to remedy chronic or emergency situations, and also to engage a replacement contractor to rectify, remedy or address any issues, during the construction phase.<br>In emerging markets, the Contracting Authority may accept greater flexibility in the construction timetable so that the risk of delays can be accommodated without penalising the Private Partner. |
| Completion (including delay and cost overrun) risk | Risk of commissioning the asset on time and on budget.<br>Risk of performance shortfalls.<br>Impact of completion risks. | Developed | | X | | The Private Partner will bear principal responsibility for delay cost overrun and performance risks.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing, construction and extended site costs. In some | The Contracting Authority will usually wish to implement a single stage completion process for commissioning the rehabilitated facilities. This will depend upon the nature of the project and in some circumstances the ROT project | The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or | In developed markets, the Private Partner will typically be responsible for familiarising itself with permitting and consenting requirements and the Contracting Authority will typically accept little (if any) risk for delays associated with |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | circumstances, there will be significant risks posed to upstream and downstream gas suppliers and users.<br>Given the nature of a gas distribution system, the Private Partner is best placed to provide all procurement, construction and commissioning of the rehabilitation works across the entire project. This is generally managed through the engagement of a single EPC contractor or EPC consortium. In some circumstances certain works may be performed by the Contracting Authority, such as connection works or reinforcement or upgrade works adjacent to the ROT project.<br>The Private Partner will be expected to demonstrate that the facility is substantially complete and meets the minimum performance levels before it is given permission to enter into commercial operation. Gas distribution projects require detailed commissioning and testing regimes to ensure that the facility meets the output, gas quality, efficiency and environmental requirements set by the minimum functional / performance specifications under the gas transportation agreement, Gas Code and other applicable legislation.<br>If additional interconnection facilities are required for the project (such as new or upgraded connections to the gas supply network), 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 will 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.<br>Separate testing and taking over requirements are generally set out for additional interconnection facilities transferred to the Contracting Authority on | will be commissioned in defined stages, for example, a network which is supporting gas distribution to several different cities or industrial users Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary incentives for timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>If the Contracting Authority is responsible for providing or procuring any new or upgraded interconnection facilities, the Contracting Authority will seek to put in place arrangements to ensure that those facilities are procured or upgraded in sufficient time to enable the performance by the Private Partner of its obligations. If the Contracting Authority is unable to complete such works on time it may be liable to compensate the Private Partner for the impact of such delays. However, the Contracting Authority's liability will be minimal when compared to the value of the project. | no-fault events. | obtaining those. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | completion. | | | |
| Completion (including delay and cost overrun) risk | Risk of commissioning the asset on time and on budget.<br>Risk of performance shortfalls.<br>Impact of completion risks. | Emerging | | X | | The Private Partner will bear principal responsibility for delay, cost overrun and performance risk.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing, construction and extended site costs.<br>Given the nature of a gas distribution system, the Private Partner is best placed to provide all procurement, construction and commissioning of the rehabilitation works across the entire project. This is generally managed through the engagement of a single EPC contractor or EPC consortium. In some circumstances there will be significant risks posed to upstream and downstream gas suppliers and users.<br>The Private Partner will be expected to demonstrate that the facility is substantially complete and meets the minimum performance levels before it is given permission to enter into commercial operation. Gas distribution projects require detailed commissioning and testing regimes to ensure that the facility meets the output, gas quality, efficiency and environmental requirements set by the minimum functional / performance specifications under the gas transportation agreement and other applicable legislation.<br>If additional interconnection facilities are required for the project (such as a new substation to supply electricity or new or upgraded connections to the gas supply network), 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 will be transferred to the Contracting Authority on completion of construction and commissioning, subject to the Private Partner's defect rectification | The Contracting Authority will usually wish to implement a single stage completion process for commissioning the rehabilitated facilities. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivise timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>If the Contracting Authority is responsible for providing or procuring any new or upgraded interconnection facilities, the Contracting Authority should ensure that those facilities are procured or upgraded in sufficient time to enable the performance by the Private Partner of its obligations.<br>If the Contracting Authority is delayed in completion of its works and this has any impact on the Private Partner it will be required to compensate the Private Partner for any of the costs incurred. | The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | In emerging market gas distribution projects there is increased risk of delays arising from unanticipated events during the construction phase and unreliable resources. Ensuring a realistic time frame at project out set rather than an ambitious or desired time frame may save time and money for all parties in the long run.<br>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 an emerging market context, the lenders may expect to receive termination compensation where the Private Partner is in default have a significant underwrite of their senior debt.<br>The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed period for operation commencing on the actual completion date, or (ii) the scheduled construction period forming part of the fixed operation period (with extensions for certain events such as force majeure).<br>With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose delay liquidated damages on the Private Partner. However this decision should always be assessed against the |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | obligations during the prescribed warranty period.<br>Separate testing and taking over requirements are generally set out for additional interconnection facilities transferred to the Contracting Authority on completion. | | | likelihood that delays will actually lead to losses being suffered, so as to avoid unnecessary contingency being built into the project (which then increases 'price'). |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Developed | | X | | The Private Partner bears the risk of achieving the performance specification such as gas quality specifications, gas flow and volumes.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Under a regulated returns model for such assets the Private Partner may be subject to abatement if performance based standards are not met. | The onus is on the Contracting Authority to draft attainable standards based on domestic and international gas standards, relevant market data and requirements and policy objectives. Performance based on gas quality, flow and volumes can be measured against pre-determined schedules or standards.<br>The relevant project documents/codes will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels for the network, the Contracting Authority should focuses on the precise service it wishes to procure and refine the performance regime (constituted by acceptance standards and tests, performance tests and performance standards) with the bidders during the bid phase. These performance levels, once negotiated, will constitute a key element of the risk transfer mechanism. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief and/or compensation. | For developed markets, there will be well developed minimum standards for the quality and flow rates of gas and acceptable performance standards<br>The Private Partner will often be benchmarked against the performance achieved by other network operators and the tariff will include elements which fluctuate depending upon meeting KPIs and benchmarking against other operators. |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Emerging | | X | | The Private Partner bears the risk of achieving the performance specification such as gas quality specifications and guaranteed gas capacity. This will be subject to the Private Partner receiving within specifications gas volumes above the minimum levels required to operate | The onus is on the Contracting Authority to draft attainable standards based on domestic and, if relevant, international gas standards, relevant market data and requirements and policy objectives. Performance based | Where performance cannot be met due to actions by the Contracting Authority or events of Government action or inaction/Government/buy er risk events, the Private | For emerging markets, particularly in the case of market first projects, the preparation of attainable standards by the Contracting Authority is often complicated by the lack of relevant and/or |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | the network.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | on gas quality, flow and volumes can be measured against pre-determined schedules or standards.<br>The relevant project documents will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels for the network, the Contracting Authority should focuses on the precise service it wishes to procure and refine the performance regime (constituted by acceptance standards and tests, performance tests and performance standards) with the bidders during the bid phase. These performance levels, once negotiated, will constitute a key element of the risk transfer mechanism.<br>In some markets, it may be appropriate to seek improved performance levels over time rather than expect the rehabilitated part of the system to immediately achieve much better performance than the entire gas system. | Partner may be eligible to seek relief and/or compensation. | historical market data. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | | X | The principal input or resource required for a gas distribution project is gas. This is usually within the ownership or control of the Contracting Authority and/or system operators and users. Accordingly responsibility for the quantity and quality of the gas supplied at the delivery point sits with the Contracting Authority. In most cases the tariff will be set to allow the Private Partner to recover capital costs and make a reasonable return without reference to the volumes of gas supplied through the network.<br>In some circumstances a gas distribution network may require a material power | The Private Partner may be incentivised to increase efficiencies in energy consumption throughout the term by a mechanism to share the savings.<br>Tariffs may include mechanisms to incentivise reductions in operation costs, such as indexation at CPI-X. | | In some developed markets gas volumes through pipeline systems have been declining in recent years, for example, due to falling gas demand due to low coal prices or declining domestic gas sources. This puts pressure on the tariffs paid to the network owners as the costs are spread over reduced volumes. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | supply for gas compression and pumping stations. The Private Partner typically bears the responsibility to supply power to the facility. The Private Partner will generally bear the risk of all other resources to operate the project, such as labour supply. | | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | | X | The principal input or resource required for a gas distribution project is gas. This is usually within the ownership or control of the Contracting Authority and/or systems operators and users. Accordingly, responsibility for the quantity and quality of the gas supplied at the delivery point sits with the Contracting Authority. In most cases the tariff will be set to allow the Private Partner to recover capital costs and make a reasonable return without reference to the volumes of gas supplied through the network.<br>In some circumstances a gas distribution network may require a material power supply for gas compression and pumping stations. The Private Partner may bear the principal responsibility to supply power to the facility.<br>The Private Partner will generally bear the risk of all other resources to operate the project, such as labour supply.<br>The Contracting Authority is usually responsible for ensuring there is sufficient quantity of line-pack gas within the system. | 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 gas, or is unable to secure the supply of the resources it is responsible for (such as a continuous energy supply) the Private Partner may be eligible to seek relief and/or compensation. The tariffs will usually be structured on a ship or pay basis. | Gas markets in emerging markets are often undeveloped and networks may not be fully functional. This increases the risks of physical curtailment in gas supply. There is also greater risk of political intervention to divert available supplies of gas to meet national requirements for example, gas may be directed towards power generation or household heating rather than export. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Developed | X | | | The default position for gas distribution projects in developed markets is that the Contracting Authority is a monopoly gas supplier, and has been the monopoly distributor through the assets the subject of the project, and will guarantee minimum quality, volumes and availability for supplied gas and retain a minimum level of demand risk.<br>In most cases, the tariff will be set to allow the Private Partner to recover capital costs and make a reasonable return without reference to the volumes of gas shipped through the network. | A ROT project usually relies upon existing gas suppliers and customer demand. | As the Contracting Authority will be retaining gas supply and consumer demand risk, it will need to ensure that it is comfortable (both politically and economically) with gas supply and consumer demand forecasts. | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | **Market Comparison Summary** |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Emerging | X | | | in emerging markets the Contracting Authority is likely to be the monopoly gas supplier, and has been the monopoly distributor through the assets the subject of the project, and will guarantee minimum quality, volumes and availability for supplied gas and retain a minimum level of demand risk. | A ROT project usually relies on existing gas suppliers and customer demand. | As the Contracting Authority will be retaining raw gas supply and consumer demand risk, it will need to ensure that it is comfortable (both politically and economically) with gas supply and consumer demand forecasts. | For emerging markets, particularly in the case of market first projects, the preparation of demand profiles by the Contracting Authority is complicated by the lack of relevant and/or historical market data.<br>The high incidence of delayed project execution in emerging markets means that demand forecasts are often out-dated by project completion. Regimes for network expansion are often drafted into the concession agreement in order to facilitate quick and efficient project expansion. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Developed | | X | | As occupier and operator of the facility until its transfer to the Contracting Authority at the end of the term, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process and/or in the gas transportation arrangements / Gas Code.<br>In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the requirements under the gas transportation arrangements/Gas Code and all applicable regulations.<br>The Private Partner generally assumes the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and all rehabilitation work.<br>Maintenance events affecting the availability of the facility and impacting on supply are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during times of peak demand. | The Contracting Authority should take time to ensure that the gas transportation arrangements/Gas Code properly defines the thresholds for the supply of gas into the connection point for the project and the Private Partner's obligations from that point.<br>Additionally, the arrangements should properly define the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>The Contracting Authority should consider specific requirements in relation to the use of property | Generally, the Contracting Authority's role will be limited to defining minimum maintenance requirements, ensuring that these are met and enforcing for rectification if they are not.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the gas supply system | In developed markets, the involvement of the Private Partner in the operation and maintenance of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the rehabilitation works (construction) phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the rehabilitation works.<br>It is common for operators to ta be subject to benchmarking against other operators of regulated gas network pipelines.<br>The tariffs will include elements which fluctuate depending upon meeting KPIs and benchmarking against other operators. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | The Contracting Authority generally retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk). In this case, the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may retain the maintenance risk associated with the infrastructure connecting with the facility, such as the gas supply pipe delivering the gas to the facility's connection point. It is usual for the Contracting Authority to also assume responsibility for all maintenance of the facility on its transfer to the Contracting Authority at the end of the term. | damage insurance to reinstate the facility and whether such requirements take precedence over any requirements of financing parties.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the Private Partner's ability to meet the contractual levels of volume, availability and quality and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the term. | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Emerging | | X | | As occupier and operator of the facility until its transfer to the Contracting Authority at the end of the term, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process and/or in the gas transportation arrangements.<br>In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the requirement under the gas transportation arrangements/Gas Code and all applicable regulations.<br>The Private Partner generally assumes the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and all rehabilitation work (including latent defects). | The Contracting Authority should take time to ensure that the raw gas transportation arrangements for the supply of gas into the connection point for the project and the Private Partner's obligations from that point.<br>Failure to get the thresholds right for the project effectively transfer risk back to the Contracting Authority.<br>Additionally, the arrangements should properly define the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be | Generally, the Contracting Authority's role will be limited to defining minimum maintenance requirements, ensuring that these are met and enforcing for rectification if they are not.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the gas supply system.<br>In certain markets the Contracting Authority may be required to undertake certain activities in support of the project for example security, prevention of acts of vandalism and assistance obtaining consents | In developed markets, the involvement of the Private Partner in the operation and maintenance of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the rehabilitation works (construction) phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the rehabilitation works. Additionally, in emerging markets, the Contracting Authority should consider its ability to take on responsibility for maintenance following the transfer of the facility on early termination or expiry and whether provisions |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | Maintenance events affecting the availability of the facility and impacting on supply are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during times of peak demand.<br>The Contracting Authority generally retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk). In this case, the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may retain the maintenance risk associated with the infrastructure connecting with the facility, such as the gas supply pipe delivering the gas to the facility's connection point. It is usual for the Contracting Authority to also assume responsibility for all maintenance of the facility on its transfer to the Contracting Authority at the end of the term. | transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>The Contracting Authority should consider specific requirements in relation to the use of property damage insurance to reinstate the facility and whether such requirements take precedence over any requirements of financing parties.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the Private Partner's ability to meet the contractual levels of volume, availability and quality and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the term. | required for the operations phase. | should be put in place to support the necessary transfer of expertise and/or personnel in the short term. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and<br>- other force majeure events which typically cannot be insured (often | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On availability based projects, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. paying the Private Partner for actual gas availability during the force majeure event and | If the force majeure event is political there may be support from the Contracting Authority depending upon the regulatory and contractual regime. | In many developed markets the Private Partner and its lenders will rely upon general protections under the law and investment regimes rather than expecting specific regimes protecting it from political risks. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be entitled to an extension of time (but sometimes only over an agreed threshold) and additional costs only in the event of a political force majeure, but an extension of time only in the event of a natural force majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of 'political force majeure' will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is 'natural' or 'political'. In the event of natural force majeure, the Private Partner would be entitled to the tariff to the extent of its availability. If it is a political force majeure event, the Private Partner would be entitled to the tariff on the basis of the availability of the plant as tested by the last availability test.<br>Where it is a prolonged force majeure event, the Contracting Authority and/or the Private Partner may have the right to terminate. Whether compensation is payable will depend upon the regulatory regime and the protections under the general laws applicable to sector and investments. | relieving it from any penalties for consequent inability to perform).<br>Alternatively the project may be subject to abatement but excused from non-performance/breach. | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage. It may be possible to insure against upstream or downstream events through "suppliers extensions" for loss of revenue coverage.<br>On availability based projects, the risk of disruption as a result | See comments on the risk of uninsurability for a gas distribution project in emerging markets. | Force majeure risks usually sit with the Contracting Authority. In some markets the Contracting Authority will endeavour to allocate these risks to the Private Partner on the grounds that insurance is available. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | - other force majeure events which typically cannot be insured (often described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be entitled to an extension of time (but sometimes only over an agreed threshold) and additional costs in the event of a force majeure. The relief available may be limited in the event of natural force majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of 'political force majeure' will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is 'natural' or 'political'. In the event of natural force majeure, the Private Partner would be entitled to the tariff to the extent of its availability. If the force majeure event is due to an upstream of downstream event the Contracting Authority will usually be required to pay the tariff even if the event is natural force majeure If it is a political force majeure event, the Private Partner would be entitled to the tariff on the basis of the availability of the plant as tested by the last availability test.<br>Where it is a prolonged force majeure event, the Contracting Authority and/or the Private Partner would generally have the right to terminate. The Private Partner would generally expect to receive more equity return than for termination for a 'natural' force majeure event. | of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of availability without incurring performance penalties). | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | The Contracting Authority would specifically prohibit the Private Partner from claiming additional costs for general currency and interest rate fluctuations.<br>The Private Partner would look to mitigate | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks. | In developed markets, the risk of currency fluctuations and interest rates can usually be hedged at reasonable rates and is a risk that is best borne |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | | | by the Private Partner. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Emerging | | | X | The Contracting Authority would specifically prohibit the Private Partner from claiming additional costs for general currency and interest rate fluctuations, although certain elements of the tariff may be adjusted for fluctuations between the local currency and relevant foreign currencies. In particular it is common practice to index a portion of operating costs to movements in foreign currencies.<br>The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | As the gas tariffs will usually be paid in local currency, the Contracting Authority may retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | In emerging markets, the risk of currency fluctuations is often a key bankability issue. Issues of convertibility of currency and restrictions on the repatriation of funds are also bankability issues, especially upon termination. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable (ie not available on commercially reasonable terms in the international insurance market) there is typically no obligation to maintain insurance for such risks. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable and insurance coverage should be less volatile than for emerging markets, this is typically a shared risk. However, in some developed jurisdictions uninsurable risk may remain with the private sector.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self- |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | | insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable (ie not available on commercially reasonable terms in the international insurance market) there may be no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | As part of the feasibility study, the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority often takes the risk of uninsurability arising on the project. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the lease or licence and access to necessary sites and the network necessary to allow the Private Partner to fulfil its obligations. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue may lead to a termination event where the Contracting Authority will need to stand behind debt and equity or the Private Partner will seek general protection from investment protection laws. | The major political risks for a regulated gas distribution network is change in the applicable regulatory regime. The Private Partner will often assess this risk as part of its initial due diligence review. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control.<br>This concept may include any act or omission of any Government entity which may have a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession.<br>The Private Partner would expect not only | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue can lead to a termination right for the Private Partner and the Contracting Authority will need to stand behind debt and equity, potentially with a Government guarantee. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The impact of change in law on a gas distribution business is often dealt with through the regulatory reset process. In some cases, the regulatory regime will often allow the network operator to apply for tariff adjustments outside the usual reset process where the costs of operating and maintaining the pipeline have been increased materially since the last reset. | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | The Contracting Authority should be mindful of how it will fund these specific/discriminatory changes should they arise. | In developed markets, the Private Partner will typically not be compensated for General Changes and likely will have less protection than in emerging countries where Contracting Authority will be expected to bear a significant portion of the change in law risk in order to attract private investment. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained. | Emerging | X | | | The risk of change in law sits with the Contracting Authority. The Private Partner will be entitled to claim for any increased costs and in relation to delay arising from a change in law.<br>A change in law is generally specifically defined and may include:<br>(i) any law coming into effect after the effective date, or existing law being modified after the effective date; (ii) any required Private Partner consent being terminated or the introduction of conditions upon renewal which materially adversely affect the Private Partner; (iii) the unjustified refusal to grant a permit and (iv) a change in gas quality standards. | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets:<br>(a) the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market;<br>(b) the Private Partner does not generally have to prove that it could have anticipated the change in law, provided that it occurred after an agreed base date; and<br>(c) changes in the environmental, safety and health law which are no more onerous than those prevailing internationally specifically |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | | excluded as changes in law. |
| Inflation risk | The risk that the inflation costs of the project increase more than expected. | Developed | | | X | Inflation risks during construction will be borne by the Private Partner<br>Under a regulated model the tariff set for each regulatory period may include some level of inflation linkage although it is common for it to be structured on a CPI-X model to incentivise year on year cost reductions and efficiency. | In some markets the project may be financed with RPI-linked debt. | The tariff may account for inflation costs by incorporating the consumer price index. | In many developed markets over recent years, inflation does not experience fluctuations to the extent of emerging markets. However, investors will expect tariffs to include a degree of protection against inflation |
| Inflation risk | The risk that the inflation costs of the project increase more than expected. | Emerging | X | | | Inflation risk is typically borne by the Contracting Authority.<br>The tariff will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as operating costs and insurance). | 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.<br>The Contracting Authority may encourage the Private Partner to hedge against inflation through locking in long term supply contracts. | The payment mechanism incorporates indexation for inflation costs by incorporating the consumer price index into the monthly payments. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term.<br>Indexation for inflation is typically linked to local (sometimes in conjunction with an international) consumer index |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Bids are awarded on the basis of the Private Partner's technical expertise and financial resources. The Contracting Authority will often want to ensure that the sponsors, particularly founding sponsors, to whom the project is awarded remain involved for a minimum period of time. | Contracting Authority will limit Private Partner's ability to change shareholding for a specified minimum period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set out proposals for governance of Private Partner.<br>Where Private Partner proposes a change in shareholding within that lock-in time, Contracting Authority may consent where the new owners meet specified criteria regarding equivalent technical expertise and financial resources. | | In developed markets, the lock in periods and conditions are typically less restrictive than in developed markets with Contracting Authorities' being more comfortable with changes in shareholding to equivalent owners.<br>In some situations the Contracting Authority will rely upon the ROT project retaining an investment grade status following any share transfer. |
| Strategic risk | Change in shareholding of Private Partner. | Emerging | | X | | Bids are awarded on the basis of Private Partner's technical expertise and financial | Contracting Authority will limit Private Partner's ability to | | In emerging markets, the lock in periods and conditions are |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | Conflicts of interest between shareholders of Private Partner. | | | | | resources. The Contracting Authority wants to ensure that the sponsors, particularly founding sponsors, to whom the project is awarded remain involved for a minimum period of time. | change shareholding for a specified minimum period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set out proposals for governance of Private Partner.<br>Where Private Partner proposes a change in shareholding within that lock-in time, Contracting Authority may consent where the new owners meet specified criteria regarding equivalent technical expertise and financial resources.<br>There may be express restrictions on changes to the constitution of the Private Partner or shareholder arrangements. | | typically more restrictive and longer than in developed markets. |
| Disruptive technology risk | Gas demand falls significantly due to rapid falls in other energy prices (for example the cost of solar), new pipeline technology makes existing tariff uneconomic (for example use of plastic piping), gas demand falls significantly due to gas price increases (for example a substantial carbon tax) | Developed | X | | | The Contracting Authority will usually take the risks associated with reductions in gas demand due to change in technology affecting the customers or gas suppliers. | The regulatory reset process allows the Contracting Authority and the Private Partner to assess the impact of disruptive technology and how such advances can be addressed in the stricture and rate of the tariff. | | The process of gas being distributed in more developed markets has been disrupted due to the rapid rise in the use of solar PV generation. |
| Disruptive technology risk | Gas demand falls significantly due to customers switching to alternative energy supply (such as microgrids with solar PV and storage) | Emerging | X | | | The Contracting Authority will usually take the risks associated with reductions in gas demand due to change in technology affecting the customers or gas suppliers. | In an emerging market the disruptive technology may enable the operator to employ new technologies and reduce operating costs when compared to traditional models. | | In emerging markets, this risk is not typically addressed in the project documents. As project implementation and execution are often delayed in emerging markets, the risk of disruptive technology may be considered higher than in |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | **Market Comparison Summary** |
| | | | | | | | | | developed markets. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Developed | | | X | The Contracting Authority can face the following risks on expiry or termination of the concession period:<br>(a) uncertainty about the type and timing of transfer of the assets (either back to the Contracting Authority or to a replacement Private Partner);<br>(b) re-delivery of poor condition or out-of-specification assets;<br>(c) receiving inadequate compensation for non-performance and early termination (if applicable);<br>(d) inability to obtain the benefit of supply/manufacturer warranties; and<br>(e) other related political and public relations issues.<br>The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>1) Contracting Authority default – the Private Partner may be entitled to claim compensation for its losses;<br>(2) Non-default termination – if the Contracting Authority chooses to terminate, the Private Partner may be entitled to claim compensation for its losses; and<br>(3) Private Partner default – no compensation payable unless set out in the regulatory regime. | The primary mitigant is that termination rights will be limited in a regulated gas market context and the parties will rely upon the regulator and the protections built into the regime.<br>The Contracting Authority should ensure that there is no uncertainty about the Private Partner's obligations at the end of the concession period (due to expiry or termination).<br>These matters can be addressed in the concession agreement and should deal with redelivery obligations, compensation (either on a net book value or present market value basis), access to warranties and guarantees and transfer of operation and maintenance know-how.<br>In some developed markets there may be step-in rights granted to Lenders although this is rare in the context of regulated gas markets. | In most circumstances these will be limited. In most circumstances these will be limited. | In most developed markets the gas market regulations will not include detailed termination compensation provisions and the Private Partner and the Contracting Authority will rely upon the relevant laws and general investment protection. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Emerging | | | X | The Contracting Authority can face the following risks on expiry or termination of the concession period:<br>(a) uncertainty about the type and timing of transfer of the assets (either back to the Contracting Authority or to a replacement Private Partner);<br>(b) re-delivery of poor condition or out-of-specification assets; | The Contracting Authority should ensure that there is no uncertainty about the Private Partner's obligations at the end of the concession period (due to expiry or termination).<br>These matters can be addressed in the concession agreement and should deal with redelivery obligations, compensation (either on a net book value or | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in | In emerging markets, there may also be sovereign guarantees which support the Contracting Authority's payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | (c) receiving inadequate compensation for non-performance and early termination (if applicable);<br>(d) inability to obtain the benefit of supply/manufacturer warranties; and<br>(e) other related political and public relations issues.<br>The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>1) Contracting Authority default – the Private Partner would get senior debt, termination costs, equity and expected equity returns; equity may be limited to a certain number of years from the date of termination<br>(2) Non-default termination – the Private Partner would get senior debt, termination costs, equity and (in some cases) a portion of expected equity returns; and<br>(3) Private Partner default – the Private Partner would seek to get senior debt and termination costs. | present market value basis), access to warranties and guarantees and transfer of operation and maintenance know-how.<br>A further key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | obligation. |

# Water and sanitation

SIN-#7991991-v10

# Water and Sanitation Sector

## Risk Matrix 10: Water desalination (BOOT)

- New desalination plant as a BOOT project where the water is sold to a state owned single buyer
- Assumes that the procuring entity identifies the site on which the project will be built
- Project scope may include associated infrastructure, such as water pipelines and electricity transmission, and, if necessary, generation facilities
- Technology may include two main technologies, reverse osmosis or distillation (main sub-technologies comprising MSF and MED). Technologies are usually specified by the procuring entity but do result in different technological risks for the project, for example RO technology is more susceptible to seawater quality including blooms of algae such as red tide
- Key risks
  - Construction risk
  - Resource or input risk
  - Disruptive technology risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical and hydrological conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | | | X | The Contracting Authority bears the principal risk for ensuring that the required land interests in the site designated for the project are available as it has selected the site. The land interests may be provided by the Contracting Authority, if it has or has acquired the relevant land rights, or a third party landowner who has agreed to grant the relevant land rights. As the project will be transferred to the Contracting Authority at the end of the agreed term, the land rights are usually granted to the project under lease or similar arrangements.<br>Land arrangements will need to extend to those required for water pipelines and other utilities (for example if significant electricity connection or generation works are required). Some responsibility for these may sit with the Private Partner if they are dependent on project design.<br>The Private Partner will be responsible for assessing the adequacy of the site designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated site may impose on the design (such as the overall layout and proposed foundation solution) and construction of the project (including access routes to the site and available laydown areas).<br>That said, there will be some areas where risk of site conditions will be shared with the Contracting Authority.<br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and manmade substructures, to the extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project. The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed or which should | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should allow access to the Private Partner during the bidding process to carry out its own surveys of the site and any existing assets or constructions.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the construction and operation of the facility.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the project. There may be historic encroachment issues that the Private Partner cannot be expected to deal with.<br>Examples include the need to manage the relocation of people (e.g. the removal of informal housing or businesses) and continued efforts to manage the social and political impact of the project on and around the site. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | have been performed by the Private Partner.<br>The Private Partner may be required to perform site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br>The Private Partner may be expected to satisfy itself as to the status of any existing assets proposed to be used in the project or of any existing assets which have been identified and require such assets to be removed or relocated. | | | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical and hydrological conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | | | X | Regardless of whether the land is Government land or private land, the Contracting Authority would generally be responsible for obtaining the relevant land rights for the developer to access and use the land – this is sometimes in the form of an usufruct agreement.<br>If, as is sometimes the case, the land for the project (particularly in the case of distribution or transmission pipelines) 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 arrangement, although such an interest will not be registrable.<br>The Private Partner will be responsible for assessing the adequacy of the site designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated site may impose on the design (such as the overall layout and proposed foundation solution) and construction of the project (including access routes to the site and available laydown areas).<br>That said, there will be some areas where risk of site conditions will be shared with the Contracting Authority.<br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and manmade substructures, to the | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process. The Contracting Authority may also commence the environmental impact assessment process during the bid phase to speed up an often very protracted process. The Contracting Authority should allow access to the Private Partner during the bidding process to carry out its own surveys of the site and any existing assets or constructions.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the construction and operation of the facility.<br>The contract between the Contracting Authority and the Private Partner should also address specific relief in relation to ground conditions (including contamination). | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Typically the Contracting Authority will be required to manage a range of different interests and stakeholders in relation the land rights being provided over a designated site area.<br>Examples include efforts to manage the social and political impact of the project on and around the site. This can be a particularly sensitive issue in an emerging market. | Land rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist. Lenders and sponsors often have to become comfortable with wholly contractual land rights (registered only through the notarisation process).<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options are available to the project. See comments on “Environmental and Social Risk” for a desalination plant project in emerging markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project. The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed or which should have been performed by the Private Partner.<br>The Private Partner may be required to perform site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br>The Private Partner may be expected to satisfy itself as to the status of any existing assets proposed to be used in the project or of any existing assets which have been identified and require such assets to be removed or relocated. | | | |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Developed | | | X | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced (such as intake water contamination) may be retained by the Contracting Authority. | The Contracting Authority should conduct the necessary initial due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Private Partner would also be required to carry out a full site investigation and the Contracting Authority will be required to review all environmental plans prepared by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Emerging | | | X | The Private Partner will have primary responsibility to manage the environmental and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced (such as intake water contamination) may be retained by the Contracting Authority. | The Contracting Authority should conduct the necessary initial due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner. In light of these investigations, the contract between the Contracting Authority and the Private Partner | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation. The Contracting Authority will often be required to manage a range of | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They will look very closely at how these risks are managed at both private and public sector level |

| Risks Category | Description | Variable | Allocation Public | Private | Shared | Rationale | Mitigation Measures | Government Support Arrangements Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | will generally provide for the allocation of environmental and social risk.<br>The Private Partner would also be required to carry out a full site investigation and the Contracting Authority will be required to review all environmental plans prepared by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | different interests and stakeholders in relation these issues. The Contacting Authority is unlikely to be able to provide any warranty in relation to these issues. | and this scrutiny is helpful to mitigate the risks posed by these issues. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the facility and its compliance with the functional / performance specification provided by the Contracting Authority.<br>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 water delivery pipe. | The Contracting Authority will generally provide minimum functional / performance specifications and require compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the detailed design.<br>The Contracting Authority should take time to ensure that the minimum functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the project.<br>A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability or its general freedom provided that the minimum functional / performance specifications are met. | | Developed market water desalination projects benefit from stable resource availability and defined design standards which allow for increased innovation and efficiency gains. |
| Design risk | The risk that the project has not been designed adequately for the | Emerging | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the facility and its compliance with the functional / performance | The Contracting Authority will require compliance with applicable legal requirements and good industry practice | | In emerging markets, the functional / performance specifications provided by the Contracting Authority (as well |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | purpose required. Feasibility study. Approval of designs. Changes to design. | | | | | specification provided by the Contracting Authority. 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 water delivery pipe. | standards. The Contracting Authority will also provide functional / performance specifications, which can often be more prescriptive than the Private Partner may anticipate. The Contracting Partner will often prevent supplies being sourced from certain jurisdictions. The Contracting Authority should take time to ensure that the functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the project. A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability or its general freedom provided that the minimum functional / performance specifications are met. | | as design oversight) can often stifle private sector innovation and efficiency gains in the detailed design. 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. |
| Construction risk | Labour dispute. Interface/project management. Commissioning damage. IP right breach/infringement. Quality assurance standards. Defective material. Latent defects. Subcontractor disputes/insolvency. Cost overruns where no | Developed | | X | | The Private Partner assumes project management risk unless certain work is dependent on Contracting Authority work/related infrastructure work being completed in which case risk could be shared. The Private Partner takes labour dispute risk unless such labour disputes are political in nature or, in some jurisdictions, nationwide. The Private Partner also takes Subcontractor insolvency risk or the risk of a dispute with its Subcontractor causing delay. The Private Partner takes the risk of IP | It may be difficult for the Private Partner to mitigate these interface risks solely through contractual risk allocation, as the financing cost / lost revenue impact is typically very high compared to the individual component parts of the project that can affect this. Ensuring that the programme for completion of the works has sufficient float periods for all critical stages and that parties are incentivised to work together to achieve the common deadlines may be more effective | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results does not adversely delay the project. Similarly the Contracting Authority may need to take responsibility for delays caused by failure of public bodies to issue | In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | compensation /relief event applies. | | | | | right infringement.<br>The Private Partner is required to design and construct to good industry practice standards and may be required to comply with or develop other quality assurance programs or standards.<br>The Private Partner will generally have an obligation to rectify defects/defective work. There may be some sharing of risk in respect of latent defects (for example, in existing assets or where due to the nature of the site it is not reasonable to expect the Private Partner to assess this risk prior to contract award.).<br>The Private Partner takes risk of cost overruns where no compensation or relief event regime applies. | strategies. | necessary consents in good time.<br>The Contracting Authority may seek to enter into direct IP arrangements with the designer/manufacturer to ensure it retains necessary IP rights in the event of Private partner IP infringement. | |
| Construction risk | Labour dispute.<br>Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Emerging | | X | | The Private Partner assumes all construction risks, save for possibly extreme forms of labour disputes which can be construed as risk assumed by the Contracting Authority in certain circumstances or force majeure etc.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be instigated through the tendering, tender evaluation and due diligence process and by way of the security provisions in the relevant documentation.<br>The concession agreement will also include limited rights to extend completion date(s), the right to terminate if the plant is not operational by a nominated longstop date (except if caused by a Government risk event) and step in rights for the Contracting Authority. | The Contracting Authority (and the lenders) will have inspection, review and approval rights in relation to the design and the manufacture, installation and erection of plant and materials on and off the site.<br>The Contracting Authority may provide time and cost relief in relation to certain types of extreme forms of labour disputes and also to step-in and take over responsibility for the project in certain circumstances. | In emerging markets, the Contracting Authority often has the right to step into the project to remedy chronic or emergency situations and also to engage a replacement contractor to rectify, remedy or address any issues, during the construction (and operation) phase. |
| Completion (including delay and cost | The risk of commissioning the asset on time and on | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk. | The Contracting Authority may wish to implement a sectional completion process to enable | The Contracting Authority may have a critical role to play at stages of the | In developed markets, enforcement of construction deadlines and budgets may |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| overrun) risk | budget and the consequences of missing either of those two criteria. | | | | | The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>Given the integrated nature of the water desalination facility, the Private Partner is best placed to provide all procurement, construction and commissioning of the entire facility. This is generally managed through the engagement of a single EPC contractor or EPC consortium.<br>The Private Partner will be expected to demonstrate that 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.<br>If additional interconnection facilities are required for the project (such as a new substation to supply electricity or extensions to the water transmission network), 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. Subject to relevant regulatory framework, ownership and 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.<br>If associated infrastructure and interconnection facilities are the responsibility of the Contracting Authority, these will need to be the subject of a firm timetable with relief/compensation for the | the facility to commence the supply of desalinated water before the end of the construction period for the entire facility. This will also enable the Private Partner to begin receiving payment for its design and construction services once sections of the project are substantially completed and 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. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>If the Contracting Authority is responsible for providing or procuring any interconnection facilities, the Contracting Authority should ensure that those facilities are procured in good time. | construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | be easier as the Private Partner will typically have more experience of the market and reliable resources. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | Private Partner for delay. | | | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>Given the integrated nature of the water desalination facility, the Private Partner is best placed to provide all procurement, construction and commissioning of the entire facility. This is generally managed through the engagement of a single EPC contractor or EPC consortium.<br>The Private Partner will be expected to demonstrate that 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.<br>If additional interconnection facilities are required for the project (such as a new substation to supply electricity or extensions to the water transmission network), 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 facilities will be transferred to the Contracting Authority on completion of construction and commissioning (or following a limited operation period), 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 | The Contracting Authority may wish to implement a sectional completion process to enable the facility to commence the supply of desalinated water before the end of the construction period for the entire facility. This will also enable the Private Partner to begin receiving payment for its design and construction services once sections of the project are substantially completed and 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. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will generally create the necessary tension to incentivize timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>If the Contracting Authority is responsible for providing or procuring any interconnection facilities, the Contracting Authority should ensure that | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | In emerging market desalination projects, there is increased risk of delays arising from unanticipated challenges in construction and unreliable resources. 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. The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed period for operation under the water purchase agreement commencing on the actual completion date, or (ii) the scheduled construction period forming part of the fixed operation period (with extensions for certain events such as force majeure). With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose delay liquidated damages on the Private Partner. However this decision should always be assessed against the likelihood that genuine out-of pocket costs will actually be incurred for such delay, so as to avoid unnecessary contingency being built into the project. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | completion.<br>If associated infrastructure and interconnection facilities are the responsibility of the Contracting Authority, these will need to be the subject of a firm timetable with relief/compensation for the Private Partner for delay. | those facilities are procured in good time.<br>The Contracting Authority may also require the right to step-in and assume the responsibilities of the Private Partner in certain limited circumstances. This right is rarely exercised. The Contracting Authority may also require a 'look forward' termination test to ensure that it can pre-emptively terminate the concession agreement if significant delay is anticipated. | | |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Developed | | X | | The Private Partner bears the risk of achieving the performance specification such as water quality specifications and guaranteed water capacity.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver. | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and requirements and policy objectives. Performance based on reliability, demonstrated water capacity and water availability, can be measured against pre-determined schedules or standards.<br>The relevant project documents will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels at which the service should be undertaken, the Contracting Authority focuses on the precise service it wishes to procure and refines the performance regime (constituted by acceptance standards and tests, performance tests, performance standards and intake water quality requirements) with the bidders during the bid phase. These performance levels, once negotiated, constitute a key element of the risk transfer | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief and/or compensation. | In developed markets formulation of appropriate specifications and the private sector's ability to manage performance to those specifications will be more manageable. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | mechanism.<br>Penalty deductions from Capacity Payments for de-rating and outages are included in the concession agreement to support achievement of the performance standards. | | |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Emerging | | X | | The Private Partner bears the risk of achieving the performance specification such as water quality specifications and guaranteed water capacity.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and requirements and policy objectives. Performance based on reliability, demonstrated water capacity and water availability, can be measured against pre-determined schedules or standards.<br>The Private Partner (and the lenders and their technical advisers) will carefully review the proposed output specification in order to ensure that it is achievable. The Private Partner will test the proposed output specification during the bid clarification period (and sometimes even during the negotiation period post-bid submission).<br>The relevant project documents will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels at which the service should be undertaken, the Contracting Authority focuses on the precise service it wishes to procure and refines the performance regime (constituted by acceptance standards and tests, performance tests, performance standards and intake water quality | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief and/or compensation. | For emerging 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 and/or historical market data. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | requirements) with the bidders during the bid phase. These performance levels, once negotiated, constitute a key element of the risk transfer mechanism.<br>Penalty deductions from Capacity Payments for de-rating and outages are included in the concession agreement to support achievement of the performance standards. | | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | | X | The main input or resource required for a desalination facility is seawater. The Contracting Authority generally bears primary responsibility in the event that intake water is contaminated. The other main input or resource required for a desalination facility is power. The Contracting Authority typically bears the primary responsibility to ensure an uninterrupted supply of power to the facility. The price of electricity or gas is often a pass-through cost. | The Private Partner may be incentivized, through a sharing mechanism, to achieve certain efficiencies in energy consumption throughout the concession period. | Where certain performance indicators cannot be met due to contaminated intake or shortage of water, the Private Partner may be eligible to seek relief and/or compensation.<br>The cost of power is generally a pass-through cost with the Contracting Authority bearing the cost of any adjustments in the price, subject to any energy usage efficiency sharing mechanism. | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern, however energy costs may still vary significantly over the course of project that must be accounted for. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | | X | The main input or resource required for a desalination facility is seawater. If the Contracting Authority is responsible for providing seawater, then the Contacting Authority will generally bear primary responsibility in the event that intake water is contaminated. If the Private Partner bears responsibility for procuring seawater, then the Private Partner will general bear primary responsibility in the event that the intake water is contaminated.<br>The other main input or resource required for a desalination facility is power. The Contracting Authority typically bears the primary responsibility to ensure an uninterrupted supply of power to the facility. The price of electricity or gas is often a pass-through cost. | The Private Partner may be incentivized, through a sharing mechanism, to increase efficiencies in energy consumption throughout the concession period.<br>In emerging markets, the Private Partner is generally unable to pass any cost increases through to an end user. | Where the Contracting Authority bears the risk of providing seawater, certain performance indicators cannot be met due to contaminated intake or shortage of water, the Private Partner may be eligible to seek relief and/or compensation.<br>The cost of power is generally a pass-through cost with the Contracting Authority bearing the cost of any adjustments in the price, subject to any energy usage efficiency mechanism. | Emerging markets are generally more susceptible to contamination events and electricity and water availability may be less reliable. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Developed | X | | | In the majority of developed world desalination projects, demand risk will be taken by the Contracting Authority with the Private Partner remunerated on an availability basis. Water resource risk is also likely to be borne by the Contracting Authority. | The Contracting Authority should do a full assessment of demand as part of the project feasibility study to ensure that the plant is appropriately sized. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | In developing markets, the Contracting Authority should have access to various data sources to develop accurate consumption forecasts, such that the Contracting Authority is well placed to manage potable water demand. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Emerging | X | | | The default position for desalination projects in emerging markets is that the Contracting Authority is a monopoly off-taker and will guarantee the purchase of all water output. Water resource risk is also likely to be borne by the Contracting Authority. | The Contracting Authority should do a full assessment of demand as part of the project feasibility study to ensure that the plant is appropriately sized. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | For emerging markets, particularly in the case of market first projects, the preparation of demand profiles by the Contracting Authority is complicated by the lack of relevant and/or historical market data.<br>The high incidence of delayed project execution in emerging markets means that demand forecasts are often out-dated by project completion. Regimes for plant expansion are often drafted into the concession agreement in order to facilitate quick and efficient project expansion. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Developed | | X | | As owner and operator of the facility until its transfer to the Contracting Authority at the end of the project, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process (for example, for reverse osmosis technologies specific requirements may be included for operation and maintenance agreements with third parties demonstrating relevant expertise and and/or for membrane supply arrangements) and/or in the water purchase agreement. In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the contractual levels of availability and output required to secure its revenue stream.<br>The Private Partner generally assumes | The Contracting Authority should take time to ensure that the water purchase agreement properly defines the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>Subject to the requirements of the Private Partner's financing | Generally speaking, the Contracting Authority's role is limited to defining minimum maintenance requirements and ensuring that these are met.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the water transmission system. | In developed markets, the involvement of the Private Partner in the operation and maintenance of the project provides several benefits by incentivizing greater care and diligence by the Private Partner in the construction phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the facility. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work.<br>Maintenance events affecting the availability of the facility are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during seasons of peak demand.<br>The Contracting Authority generally retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk), in which case the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may 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. | parties, the Contracting Authority should consider specific requirements in relation to the use of property damage insurance to reinstate the facility.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the Private Partner's ability to meet the contractual levels (in volume and quality) of availability and output and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the project. | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Emerging | | X | | As owner and operator of the facility until its transfer to the Contracting Authority at the end of the project, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process (for example, for reverse osmosis technologies specific requirements may be included for operation and maintenance agreements with third parties demonstrating relevant expertise and and/or for membrane supply arrangements) and/or in the water purchase agreement. In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the contractual levels of availability and output required to secure its revenue stream. | The Contracting Authority should take time to ensure that the water purchase agreement properly defines the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>Subject to the requirements of | Generally speaking, the Contracting Authority's role is limited to defining minimum maintenance requirements and ensuring that these are met.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the water transmission system. | In emerging markets, the involvement of the Private Partner in the operation and maintenance of the project secures the expertise of the Private Partner for the life of the project, in addition to incentivizing greater care and diligence by the Private Partner in the construction phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the facility.<br>In emerging markets, the Contracting Authority should consider its ability to take on responsibility for maintenance |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | The Private Partner generally assumes the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and rehabilitation work.<br>Maintenance events affecting the availability of the facility are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during seasons of peak demand.<br>The Contracting Authority generally retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk), in which case the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may retain the maintenance risk associated with the facility, such as the water delivery pipe taking water from the facility's delivery point. | the Private Partner's financing parties, the Contracting Authority should consider specific requirements in relation to the use of property damage insurance to reinstate the facility.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the Private Partner's ability to meet the contractual levels (in volume and quality) of availability and output and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the project. | | following the transfer of the facility on early termination or expiry and whether provisions should be put in place to support the necessary transfer of expertise and/or personnel in the short term. |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and<br>- other force majeure events which typically cannot be insured (often described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be entitled to an extension of time (but sometimes only over an agreed threshold) | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On availability based projects, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (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).<br>In some jurisdictions the project may be subject to abatement but not excused from non- | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, in some jurisdictions the Contracting Authority may be required to fully compensate the Private Partner for debt owed to | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a "natural" force majeure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | and additional costs only in the event of a political force majeure, but an extension of time only in the event of a natural force majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of 'political force majeure' will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of loss has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is 'natural' or 'political'. In the event of natural force majeure, the Private Partner would be entitled to the tariff to the extent of its availability. In the event of a political force majeure event, the Private Partner would be entitled to the tariff on the basis of the availability of the plant as tested by the last availability test.<br>In the event of a prolonged force majeure event, the Contracting Authority would generally have the right to terminate. The Private Partner would generally expect to receive more equity return than for termination for a 'natural' force majeure event. | performance/breach. | the lenders. Whether the debt will be kept whole in such a scenario, will be a key area of focus for prospective lenders as part of their initial credit assessments. | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and<br>- other force majeure events which typically cannot be insured (often described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On availability based projects, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of availability without incurring performance penalties). | See comments on the risk of uninsurability for a Desalination Plant projects in emerging markets. | On emerging market transactions, the Contracting Authority often does not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. In the event of prolonged force majeure, the Contracting Authority will be entitled to terminate. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | entitled to an extension of time (but sometimes only over an agreed threshold) and additional costs only in the event of a political force majeure, but an extension of time only in the event of a natural force majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of ‘political force majeure’ will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of loss has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is ‘natural’ or ‘political’. In the event of natural force majeure, the Private Partner would be entitled to start receiving the tariff to the extent of its availability. In the event of a political force majeure event, the Private Partner would be entitled to start receiving the tariff on the basis of the availability of the plant as tested by the last availability test.<br>In the event of a prolonged force majeure event, the Contracting Authority would generally have the right to terminate. The Private Partner would generally expect to receive more equity return than for termination for a ‘natural’ force majeure event. | | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | Currency fluctuations and interest rate fluctuation risks will generally be borne by the Private Partner. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks.<br>However in some circumstances the Contracting Authority may seek to retain interest rate risk if it feels it can bear the risk more efficiently than the private sector. | In developed markets, the risk of currency fluctuations and interest rates is generally not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the | Emerging | | | X | The Contracting Authority would specifically prohibit the Private Partner from claiming additional costs in the event | The Private Partner would look to mitigate this risk through hedging arrangements under the | As the tariff will be paid in local currency, the Contracting Authority may | In emerging markets, the risk of currency fluctuations is often a key bankability issue. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | life of a project | | | | | of general currency and interest rate fluctuations, although certain elements of the tariff may be adjusted for fluctuations between the local currency and USD (eg in de-pegging scenario). | Finance Documents, to the extent possible in that market.<br>In certain countries, this may not be possible due to exchange / interest rate volatility or due to the lack of hedging markets for pegged currencies. | retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and service foreign currency debt). | Issues of convertibility of currency and restrictions on repatriation of funds are also bankability issues upon termination in emerging markets. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable and insurance coverage should be less volatile than for emerging markets, this is typically a shared risk. However in some developed jurisdictions uninsurable risk may remain with the private sector.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by having either an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option either to terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable (i.e. not available on commercially reasonable terms in the international insurance market) there is typically no obligation to maintain insurance for such risks. | As part of the feasibility study, the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | If an uninsured risk event occurs, the Private Partner will typically have to bear this risk, although sometimes the Contracting Authority becomes the insurer of last resort.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | the location and other factors relevant to the project. | where this has been caused by in-country or regional events or circumstances. | although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the license and access to the system and surrounding lands necessary to allow the Private Partner to fulfil its obligations. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control.<br>This concept may include any act or omission of any Government entity which may have a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession.<br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination right for the Private Partner and the Contracting Authority will need to stand behind debt and equity. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) specific (to the water sector or to PPP projects in the jurisdiction) or (iii) general change in law affecting capital expenditures. A change in law is often subject to a de minimis threshold before the Private Partner is | The Private Partners' entitlement to relief may be subject to minimum thresholds. | Past concession models (including that developed 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 | In developed markets change in law risk is likely to be of less concern to Private Partners, although Private Partners will still expect protection against discriminatory change in law and, in some jurisdictions, general change in law which has material cost impact. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | entitled to compensation<br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a Variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred. | | represent value for money and reversed this position. Some countries which adopted the SOPC model had already taken this approach. Accordingly the Contracting Authority should be mindful of how it will fund these changes should they arise. The regulation of water pricing for consumers may impact on the extent and timing of ultimate pass through to end users. | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained. | Emerging | X | | | The risk of change in law sits with the Contracting Authority. The Private Partner will be entitled to claim for any increased costs and in relation to delay arising from a change in law.<br>A change in law is generally specifically defined and may include:<br>(i) any law coming into effect after the effective date, or existing law being modified after the effective date; (ii) any required Private Partner consent being terminated or the introduction of conditions upon renewal which materially adversely affect the Private Partner; (iii) the unjustified refusal to grant a permit and (iv) a change in the grid code or water code. | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets:<br>(a) the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market;<br>(b) the Private Partner does not generally have to prove that it could have anticipated the change in law, provided that it occurred after an agreed base date; and<br>(c) changes in the environmental, safety and health law which are no more onerous than those prevailing internationally and changes in the exchange rate between local currency and USD are often specifically excluded as changes in law. This reflects both the Contracting Authority's expectations about the Private Partners (ie as international developers, |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | | contractors and operators) and the developing nature of legislative reform in these areas. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority.<br>On availability-based projects, during the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index. | 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. | The payment mechanism incorporates indexation for inflation costs by incorporating the consumer price index into the monthly payments. | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risk is typically borne by the Contracting Authority by way of tariff adjustment in operation phase.<br>On availability-based projects, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as labour and chemicals). | 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. | The payment mechanism incorporates indexation for inflation costs by incorporating the consumer price index into the monthly payments. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term.<br>Indexation for inflation is typically linked to local (sometimes in conjunction with an international) consumer index. In emerging markets, local consumer index lack independence and are sometimes manipulated by the Government for fiscal and social reasons. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | The Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Any bid will be awarded on the basis of the Private Partner's technical expertise and financial resources and for this reason the sponsors of the Private Partner should remain involved in the project. | The Contracting Authority will limit the Private Partner's shareholder's ability to change their shareholding for a period (i.e. there is typically a lock-in for at least the construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met. | | In developed markets the Private Partners' 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, particularly in the equity investor markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | | | | | | | The tender documentation should set out proposals for any restrictions on the shareholders of the Private Partner. | | |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Bids are awarded on the basis of Private Partner's technical expertise and financial resources. The Contracting Authority wants to ensure that the sponsors, particularly founding sponsors, to whom the project is awarded remains involved (for sometimes up to 7 years after commercial operation).<br>The Contracting Authority will typically enter into a shareholders' agreement or founders' agreement with the Private Partner. Often Government entities will take a shareholding in the project company. In some jurisdictions there is an obligation on the project company to offer a certain percentage of its shares to the public via an initial public offering. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In emerging markets, the lock in periods and conditions are typically more restrictive and longer than in developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology. | Developed | X | | | The technology will usually be specified by the Contracting Authority in the minimum functional specification. | The Contracting Authority should do a full assessment of relevant technologies as part of the project feasibility study to ensure that the selected technologies are appropriate to the conditions of the project and market tested.<br>The Private Partner will often be encouraged to identify any issues with the selected technology during the bid phase and to submit an alternative bid based on alternative technology. | The concession contract will usually contain a variation clause (if permitted by local law) which would provide for both Contracting Authority and Private Partner-proposed variations to the minimum functional specification. | As these types of projects utilise very specialised technology, requirements for the Private Partner to take on obligations to take advantage of, or use, new technology are unlikely. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology. | Emerging | X | | | The technology will usually be specified by the Contracting Authority in the minimum functional specification. | The Contracting Authority should do a full assessment of relevant technologies as part of the project feasibility study to ensure that the selected technologies are appropriate to the conditions of the project and market tested.<br>The Private Partner will often be encouraged to identify any issues with the selected technology during the bid phase and to submit an alternative bid based on alternative technology. | The concession contract will usually contain a variation clause (if permitted by local law) which would provide for both Contracting Authority and Private Partner-proposed variations to the minimum functional specification. | In emerging markets, this risk is not typically addressed in the project documents. Contracting Authorities often seek alternative bids in order to consider alternative technology proposals. As project implementation and execution are often delayed in emerging markets, the risk of technology change could be considered higher than in developed markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common for the senior debt to be guaranteed as a minimum in every termination scenario (other than Private Partner default) and for rights of set-off below that figure to be restricted. | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | Early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Emerging | | | X | The Contracting Authority can face the following risks on expiry or termination of the concession period:<br>(a) uncertainty about the type and timing of transfer of the plant (either back to the Contracting Authority or to a replacement Private Partner);<br>(b) re-delivery of poor condition or out-of-specification facilities;<br>(c) receiving inadequate compensation for non-performance and early termination (if applicable);<br>(d) inability to obtain the benefit of supply/manufacturer warranties; and<br>(e) other related political and public relations issues. | The Contracting Authority should ensure that there is no uncertainty about the Private Partner's obligations at the end of the concession period (due to expiry or termination).<br>These matters can be addressed in the concession agreement and should deal with redelivery obligations, compensation (either on a net book value or present market value basis), access to warranties and guarantees and transfer of operation and maintenance know-how.<br>A further key mitigant is to make | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government (eg the Ministry of Finance) to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event | In emerging markets, there may also be sovereign guarantees which support the Contracting Authority's payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | The level of compensation payable on early termination will depend on the reasons for termination.<br>(1) Private Partner right to terminate, such as for (a) non-payment of capacity and output payments for typically between 30-60 days; (b) nationalisation or expropriation of the plant; (c) prolonged events of Government action or inaction / Government/buyer risk events which continue for 365 days (unless the Contracting Authority elects to continue making capacity payments).<br>*The Private Partner will typically receive full repayment of senior debt, and a fixed rate of return on equity contributions and an amount based on future predicted cash flows plus termination costs.*<br>(2) Contracting Authority right to terminate, such as for (a) when commercial operation date is not achieved within a certain period from scheduled commercial operation (generally 200 days); (b) wilful default and material default; (c) failure to remedy defects; (d) failure to pay LDs; (e) reduction of average availability of the plant; (f) termination of desalination licence or land rights; prolonged (typically 365 days) events of Government action or inaction / Government/buyer risk events.<br>*The Private Partner will receive full repayment of senior debt only.*<br>(3) prolonged force majeure<br>*The Private Partner will receive full repayment of senior debt, equity contributions less equity dividends and termination costs. If the relevant force majeure event is 'political', then the Private Partner will also often be entitled to a capped equity return.*<br>It is common 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. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically | sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | have the right to call for a termination in these circumstances (ie the Contracting Authority has a discretion as to whether to terminate), and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights.<br>In some emerging markets, the Private Partner is contractually prohibited from terminating in the certain circumstances. | | | |

# Risk Matrix 11: Water distribution (ROT)

- Water distribution project for an existing utility as a ROT project where the wholesale supplier of water is a state owned entity and the water tariffs are set under the terms of the concession
- Assumes that the procuring entity identifies the site on which the project will be built
- Key risks
  - Land purchase and site risk
  - Maintenance risk
  - Strategic risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical and hydrological conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | X | | | The Contracting Authority bears the principal risk for ensuring that the required land interests in the sites designated for the project are within its ownership or control, or that it has sufficient legal rights (contractual or statutory) over them to enable this to occur.<br>The land interests may be provided by the Contracting Authority to the Private Partner, if it has or has acquired the relevant land rights (through contract or statute), or a third party landowner who has agreed to grant the relevant land rights. As the project will be transferred to the Contracting Authority at the end of the agreed term, the land rights are usually granted to the project under lease or similar arrangements.<br>Additionally, the Contracting Authority bears the principal risk of ensuring that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Private Partner will be responsible for assessing the adequacy of the sites designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated sites may impose on the design and construction of the rehabilitation works. This will be particularly important in relation to obtaining access to the pipe network, including temporary occupation of sites for maintenance and laydown areas.<br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and man-made substructures, to the extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project.<br>The Contracting Authority would also generally be responsible for compliance with planning and environmental laws and approvals as at the commencement of the | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should also undertake detailed site surveys to identify the location of the existing assets and to confirm, or otherwise, that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Contracting Authority should allow access to the Private Partner during the bidding process to carry out its own surveys of the sites and the existing assets.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the rehabilitation and operation of the facility. This includes third party interference, whether accidental or wilful, to the pipe network.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site. | The Contracting Authority may need to use its legislative powers to obtain and then secure the sites and easements (e.g. through expropriation / compulsory acquisition).<br>Even where there is a legally clear site, Government enforcement powers may be needed to properly secure the site for the project. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. This may particularly be the case in relation to the pipe network.<br>Examples include the need to manage the relocation of people, either permanently or temporarily and continued efforts to manage the social and political impact of the project on and around the sites and easements. | Land and access rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records. Where there are deficiencies, these can often be easily cured through the exercise of statutory powers for acquisition and access.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example the requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | term.<br>The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed by the Contracting Party.<br>The Private Partner may be required to perform its own site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br>The Private Partner may be expected to satisfy itself as to the status of any existing assets proposed to be used in the project or of any existing assets which have been identified and required to be removed or relocated.<br>Where it is not possible to fully survey prior to award (eg. Identification of underground existing assets) risk will be allocated to the Contracting Authority or shared. | | | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Emerging | X | | | The Contracting Authority bears the principal risk for ensuring that the required land interests in the sites designated for the project are within its ownership or control, or that it has sufficient legal rights (contractual or statutory) over them to enable this to occur.<br>The land interests may be provided by the Contracting Authority to the Private Partner, if it has or has acquired the relevant land rights (through contract or statute), or a third party landowner who has agreed to grant the relevant land rights. As the project will be transferred to the Contracting Authority at the end of the agreed term, the land rights are usually granted to the project under lease or similar arrangements.<br>Additionally, the Contracting Party bears the principal risk of ensuring that the existing assets are located on the sites and within the easements that it owns or controls. | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should also undertake detailed site surveys to identify the location of the existing assets and to confirm, or otherwise, that the existing assets are located on the sites and within the easements that it owns or controls.<br>The Contracting Authority should allow access to the Private Partner during the bidding process to carry out its own surveys of the sites and the existing assets.<br>The Contracting Authority | The Contracting Authority may need to use its legislative powers to obtain and then secure the sites and easements (e.g. through expropriation / compulsory acquisition).<br>Even where there is a legally clear site, Government enforcement powers may be needed to properly secure the site for the project. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. This may particularly be the case in relation to the pipe network.<br>Examples include the need to manage the | Land and access rights and ground conditions (in particular reliable utilities records, and land charges) in emerging markets may be less certain than in developed markets where established land registries and utility records exist. Lenders and sponsors often have to become comfortable with wholly contractual land rights (registered only through the notarisation process).<br>In the absence of legislation in emerging markets, indigenous land rights issues and community engagement can be managed by the Contracting Authority through the adoption of IFC Safeguards for the project, particularly in order to ensure international financing options |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | The Private Partner will be responsible for assessing the adequacy of the sites designated by the Contracting Authority and the land rights granted (including any associated easements and access rights) and any restraints that the designated sites may impose on the design and construction of the rehabilitation works. This will be particularly important in relation to obtaining access to the pipe network, including temporary occupation of sites for maintenance and laydown areas.<br>The Contracting Authority would generally be responsible for pre-existing contamination, archaeological finds or fossils and man-made substructures, to the extent not already known or revealed by site surveys, either by dealing with such finds or providing relief for the impacts on the project.<br>The Contracting Authority would also generally be responsible for compliance with planning and environmental laws and approvals as at the commencement of the term.<br>The Contracting Authority may also accept responsibility for unknown geotechnical conditions although this may be limited to certain types of conditions and will be restricted to conditions that were not reasonably foreseeable based on site surveys performed the Contracting Party..<br>The Private Partner may be required to perform its own site surveys to provide a baseline report to demonstrate pre-existing site conditions.<br>The Private Partner may be expected to satisfy itself as to the status of any existing assets proposed to be used in the project or of any existing assets which have been identified and required to be removed or relocated. | should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that may impact on the rehabilitation and operation of the facility. This includes third party interference, whether accidental or wilful, to the pipe network. | relocation of people, either permanently or temporarily and continued efforts to manage the social and political impact of the project on and around the sites and easements. | are available to the project. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of | Developed | | X | | The Private Partner will have primary responsibility to accept the project site and existing assets in an “as is” condition, subject to the Contracting Authority’s disclosure of relevant matters, and | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and existing assets and | The Contracting Authority will need to take meaningful steps both before and during the project to manage social | Environmental scrutiny is increasing even in developed markets, as both Private Partners and Contracting Authorities have come under |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | damage to the environment or local communities | | | | | manage the environmental, public health and social strategy across the project, as well as obtaining and maintaining all required licenses, permits and authorisations as necessary.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the Contracting Authority. See comments on "Land purchase and site risk" for a water distribution project in developed markets.<br>Social risks, insofar as they may involve indigenous groups, will be the responsibility of the Contracting Authority. | disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forward by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | increasing burdens to develop sound environmental, public health and social risk management plans before construction begins. For example, in Australia the requirement for such plans is required by legislation.<br>International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Environmental and social risk | The risk of the existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities | Emerging | | | X | The Private Partner will have primary responsibility to manage the environmental, public health and social strategy across the project, however existing environmental conditions which cannot be adequately catered for or priced (such as intake water contamination) may usually to be retained by the Contracting Authority. | The Contracting Authority should conduct the necessary initial due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Private Partner would also be required to carry out a full site investigation and the Contracting Authority will be required to review all environmental plans prepared by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with. | International lenders and development finance institutions are particularly sensitive about environmental and social risks, as a result of their commitment to the Equator Principles. They 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. |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the rehabilitation works and its compliance with the functional / performance specification provided by the Contracting Authority.<br>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 | The Contracting Authority will generally provide minimum functional / performance specifications and require compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the detailed design.<br>The Contracting Authority should | The Contracting Authority's role will be limited to review of the design to ensure that the minimum functional / performance specifications will be able to be met. This review will not be an approval, however, and will not limit the liability of the Private | Developed market water distribution projects benefit from stable resource availability, robust regulatory regimes and defined design standards which allow for increased innovation and efficiency gains. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | supply connection points and raw water quantity and quality, and for the condition of the existing assets as at the commencement of the term. | take time to ensure that the minimum functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the term.<br>A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability (for example, by way of approval by the Contracting Authority) or its general freedom provided that the minimum functional / performance specifications are met. | Partner. | |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Emerging | | X | | The Private Partner will have principal responsibility for the adequacy of the design of the rehabilitation works and its compliance with the functional / performance specification provided by the Contracting Authority.<br>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 for the condition of the existing assets as at the commencement of the term. | The Contracting Authority will generally provide minimum functional / performance specifications and require compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the detailed design.<br>The Contracting Authority should take time to ensure that the minimum functional / performance specifications will provide a facility that will meet the Contracting Authority's expectations on transfer of the facility to the Contracting Authority at the end of the term.<br>A design review process will allow for the Contracting Authority to review and comment on the Private Partner's detailed design; however, the review process should not be construed as a reduction or limitation of the Private Partner's overall liability | The Contracting Authority's role will be limited to review of the design to ensure that the minimum functional / performance specifications will be able to be met. This review will not be an approval, however, and will not limit the liability of the Private Partner. | Developed market distribution projects will generally have well defined design standards. However, particularly on a rehabilitation project, the quality of information provided by the Contracting Authority and limited ability to verify that data may hinder the Private Partner's ability to assume this risk unconditionally. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | (for example, by way of approval by the Contracting Authority) or its general freedom provided that the minimum functional / performance specifications are met. | | |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | Developed | | X | | The Private Partner assumes all construction risks.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the tendering, tender evaluation and due diligence process and by way of the security provisions in the relevant documentation.<br>The concession agreement will also include limited rights to extend completion date, the right to terminate if the upgraded facility and network is not operational by a nominated longstop date (except if caused by a Government risk event) and step in rights for the Contracting Authority. | The Contracting Authority (and the lenders) will have inspection, review and approval rights in relation to the design and construction of the works to the facility and the network. | In developing markets, the Contracting Authority often has the right to step into the project to remedy chronic or emergency situations, including water quality and public health issues, and also to engage a replacement contractor to rectify, remedy or address any issues, during the construction and operation phase.<br>In developed markets risk is considered manageable through robust pass through of obligations to credible and experienced subcontractors and by appropriate timetable and budget contingency. |
| Construction risk | Labour dispute. Interface/project management.<br>Commissioning damage.<br>IP right breach/infringement.<br>Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Subcontractor | Emerging | | X | | The Private Partner assumes all construction risks.<br>The concession agreement will typically address construction risk as part of the termination regime. | These risks can be mitigated through various means, including ensuring that the Private Partner has the requisite experience in the sector (demonstrated over a lengthy period) and obtaining appropriate security to the risk of non-performance (for example, parent company guarantees, performance bonds and letters of credit).<br>These mitigants can be implemented through the | The Contracting Authority (and the lenders) will have inspection, review and approval rights in relation to the design and construction of the works to the facility and the network. | In emerging markets, the Contracting Authority often has the right to step into the project to remedy chronic or emergency situations, including water quality and public health issues, and also to engage a replacement contractor to rectify, remedy or address any issues, during the construction (and operation) phase. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | disputes/insolvency.<br>Cost overruns where no compensation /relief event applies. | | | | | | tendering, tender evaluation and due diligence process and by way of the security provisions in the relevant documentation.<br>The concession agreement will also include limited rights to extend completion date, the right to terminate if the upgraded facility and network is not operational by a nominated longstop date (except if caused by a Government risk event) and step in rights for the Contracting Authority. | | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk.<br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br>Given the integrated nature of the water distribution system, the Private Partner is best placed to provide all procurement, construction and commissioning of the rehabilitation works across the entire facility. This is generally managed through the engagement of a single EPC contractor or EPC consortium.<br>The Private Partner will be expected to demonstrate that the facility is substantially complete and meets the minimum performance levels before it is given permission to enter into commercial operation. Water distribution 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 under contract and legislation.<br>If additional interconnection facilities are required for the project (such as new or upgraded connections to the raw water supply network), construction of these additional facilities may also be included within the Private Partner's scope of | The Contracting Authority will usually wish to implement a single stage completion process for commissioning the rehabilitated facilities. Financial penalties and liquidated damages can help enforce construction deadlines.<br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivise timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br>If the Contracting Authority is responsible for providing or procuring any new or upgraded interconnection facilities, the Contracting Authority should ensure that those facilities are procured or upgraded in sufficient time to enable the performance by the Private Partner of its obligations. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time (depending on whether such risk has been assumed by the Contracting Authority or the Private Partner). | In developed markets, enforcement of construction deadlines and budgets may be easier than in emerging markets as the Private Partner will typically have more experience of the market and reliable resources, and be more confident in its ability and focus for enforcing its rights. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | 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 will 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.<br><br>Separate testing and taking over requirements are generally set out for additional interconnection facilities transferred to the Contracting Authority on completion. | | | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria. | Emerging | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk.<br><br>The principal risk arising out of delay will be the loss of expected revenue, the ongoing costs of financing construction and extended site costs.<br><br>Given the integrated nature of the water distribution system, the Private Partner is best placed to provide all procurement, construction and commissioning of the rehabilitation works across the entire facility. This is generally managed through the engagement of a single EPC contractor or EPC consortium.<br><br>The Private Partner will be expected to demonstrate that the facility is substantially complete and meets the minimum performance levels before it is given permission to enter into commercial operation. Water distribution 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 under contract and legislation.<br><br>If additional interconnection facilities are required for the project (such as a new substation to supply electricity or new or upgraded connections to the raw water | The Contracting Authority will usually wish to implement a single stage completion process for commissioning the rehabilitated facilities. Financial penalties and liquidated damages can help enforce construction deadlines.<br><br>The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a "longstop date" (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivise timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project.<br><br>If the Contracting Authority is responsible for providing or procuring any new or upgraded interconnection facilities, the Contracting Authority should ensure that those facilities are procured or upgraded in sufficient time to enable the performance by the Private | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br><br>The Contracting Authority will generally allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br><br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | In emerging market water distribution projects there is increased risk of delays arising from unanticipated challenges in construction and unreliable resources. Ensuring a realistic time frame at project out set rather than an ambitious or desired time frame may save time and money for all parties in the long run.<br><br>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 an emerging market context, the dynamics may be different if the lenders have a significant underwrite of their senior debt.<br><br>The management of completion risk is typically addressed by having either: (i) a scheduled completion date (with attached liquidated damages for delay) followed by a fixed period for operation commencing on the actual completion date, or (ii) the scheduled construction period |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | supply network), 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 will 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.<br>Separate testing and taking over requirements are generally set out for additional interconnection facilities transferred to the Contracting Authority on completion. | Partner of its obligations. | | forming part of the fixed operation period (with extensions for certain events such as force majeure).<br>With the latter scenario, in emerging markets, the Contracting Authority may attempt to additionally impose delay liquidated damages on the Private Partner. However this decision should always be assessed against the likelihood that genuine out-of pocket costs will actually be incurred for such delay, so as to avoid unnecessary contingency being built into the project (which then increases 'price'). |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Developed | | X | | The Private Partner bears the risk of achieving the performance specification such as water quality specifications, water flow and volumes.<br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br>In an availability based payment structure the Private Partner may be subject to abatement if performance based standards are not met. | The onus is on the Contracting Authority to draft attainable standards based on domestic and international water standards, relevant market data and requirements and policy objectives. Performance based on water quality, flow and volumes can be measured against pre-determined schedules or standards.<br>The relevant project documents will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels for the network, the Contracting Authority should focuses on the precise service it wishes to procure and refine the performance regime (constituted by acceptance standards and tests, performance tests and performance standards) with the bidders during the bid phase. These performance levels, once | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief and/or compensation. | For developed markets, there will be well developed domestic and international minimum standards for the quality and flow of water that will generally be uncontested during the bid phase. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | negotiated, will constitute a key element of the risk transfer mechanism. | | |
| Performance/ price risk | The risk that the asset is unable to achieve the output specification metrics and the price or cost of doing so. | Emerging | | X | | The Private Partner bears the risk of achieving the performance specification such as water quality specifications and guaranteed water capacity.<br><br>The Contracting Authority bears the risk of enforcing the regime and for ensuring that the output specification is properly tailored to what the Private Partner can deliver.<br><br>Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels given the nature of the project and the emerging market in which it will be based. | The onus is on the Contracting Authority to draft attainable standards based on domestic and international water standards, relevant market data and requirements and policy objectives. Performance based on water quality, flow and volumes can be measured against pre-determined schedules or standards.<br><br>The relevant project documents will contain clear key performance indicators, output specifications, appropriate financial damages for non-performance and transparent reporting requirements. In developing the outputs needed, and the desired performance levels for the network, the Contracting Authority should focuses on the precise service it wishes to procure and refine the performance regime (constituted by acceptance standards and tests, performance tests and performance standards) with the bidders during the bid phase. These performance levels, once negotiated, will constitute a key element of the risk transfer mechanism. | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen circumstances, the Private Partner may be eligible to seek relief and/or compensation. | For emerging 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 and/or historical market data. |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Developed | | | X | 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.<br><br>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 | The Private Partner may be incentivised to increase efficiencies in energy consumption throughout the term by a mechanism to share the savings.<br><br>The Private Partner will be limited, however, in its ability to pass through any costs to the end consumer due to the fixing of water tariffs in the concession. | 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) the Private Partner may be eligible to seek relief and/or | Developed markets generally do not experience market volatility to the extent of emerging markets, and resource availability is less of a concern. Energy costs may still vary significantly over the course of project that must be accounted for and may not be able to be passed through to consumers. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | 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. | | compensation. | |
| Resource or input risk | The risk that the supply of inputs or resources required for the operation of the project is interrupted or the cost increases. | Emerging | | | X | 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.<br>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.<br>The Private Partner will generally bear the risk of all other resources to operate the project, such as labour supply.<br>Time and cost risks associated with water and power supply are typically retained by the Contracting Authority. All other time and cost risks would be borne by the Private Partner and typically passed on to contractors. | The Private Partner may be incentivised to increase efficiencies in energy consumption throughout the term by a mechanism to share the savings.<br>The Private Partner will be limited, however, in its ability to pass through any costs to the end consumer due to the fixing of water tariffs in the concession. | 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) the Private Partner may be eligible to seek relief and/or compensation. | Emerging markets are generally more susceptible than developed markets to contamination events and market volatility/major cost variations, including labour security and costs. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand for the product of service of a project by consumers/users | Developed | X | | | The default position for water distribution projects in developed markets is that the Contracting Authority is a monopoly raw water supplier, and has been the monopoly distributor through the assets the subject of the project, and will guarantee minimum quality, volumes and availability for supplied raw water and retain a minimum level of demand risk. | As it will be absorbing a minimum level of resource (supply) and demand risk, the Contracting Authority should do a full assessment of raw water supply and consumer demand as part of the project feasibility study to ensure that the concession agreement appropriately addresses and allocates risk for everything that will impact on raw water supply and consumer demand. | As the Contracting Authority will be retaining raw water supply and consumer demand risk, it will need to ensure that it is comfortable (both politically and economically) with water supply and consumer demand forecasts. | In developing markets, the Contracting Authority should have access to various data sources to develop accurate consumption forecasts, such that the Contracting Authority is well placed to manage potable water demand. |
| Demand risk | The availability by both volume and quality along with transportation of resource or inputs to a project or the demand | Emerging | X | | | The default position for water distribution projects in emerging markets is that the Contracting Authority is a monopoly raw water supplier, and has been the monopoly distributor through the assets the subject of the project, and will | The Contracting Authority should do a full assessment of raw water supply and consumer demand as part of the project feasibility study to ensure that the concession agreement | As the Contracting Authority will be retaining raw water supply and consumer demand risk, it will need to ensure that it is comfortable (both | For emerging markets, particularly in the case of market first projects, the preparation of demand profiles by the Contracting Authority is complicated by the lack of |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | for the product of service of a project by consumers/users | | | | | guarantee minimum quality, volumes and availability for supplied raw water and retain a minimum level of demand risk. | appropriately addresses and allocates risk for everything that will impact on raw water supply and consumer demand. | politically and economically) with water supply and consumer demand forecasts. | relevant and/or historical market data.<br>The high incidence of delayed project execution in emerging markets means that demand forecasts are often out-dated by project completion. Regimes for network expansion are often drafted into the concession agreement in order to facilitate quick and efficient project expansion. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Developed | | X | | As occupier and operator of the facility until its transfer to the Contracting Authority at the end of the term, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process and/or in the raw water supply agreement.<br>In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the contractual levels of quality, availability and volume of output required to secure its revenue stream.<br>The Private Partner generally assumes the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and all rehabilitation work.<br>Maintenance events affecting the availability of the facility and impacting on supply are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during times of peak demand.<br>The Contracting Authority generally retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk). In this case, the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those | The Contracting Authority should take time to ensure that the raw water supply agreement properly defines the thresholds for the supply of water into the facility and the Private Partner's obligations from that point.<br>Additionally, the arrangements should properly define the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>Subject to the requirements of the Private Partner's financing parties, the Contracting Authority should consider specific requirements in relation to the use of property damage insurance to reinstate the facility.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the | Generally, the Contracting Authority's role will be limited to defining minimum maintenance requirements, ensuring that these are met and enforcing for rectification if they are not.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the water supply system | In developed markets, the involvement of the Private Partner in the operation and maintenance of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the rehabilitation works (construction) phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the rehabilitation works. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may retain the maintenance risk associated with the infrastructure connecting with the facility, such as the water supply pipe delivering the water to the facility's delivery point. It is usual for the Contracting Authority to also assume responsibility for all maintenance of the facility on its transfer to the Contracting Authority at the end of the term. | Private Partner's ability to meet the contractual levels of volume, availability and quality and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the term. | | |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Incorrect estimates and cost overruns. | Emerging | | X | | As occupier and operator of the facility until its transfer to the Contracting Authority at the end of the term, the Private Partner will have responsibility for meeting the maintenance requirements defined by the Contracting Authority during the bidding process and/or in the raw water supply agreement.<br>In addition to specific maintenance requirements imposed by the Contracting Authority, the Private Partner will be responsible for maintaining the facility so as to meet the contractual levels of quality, availability and volume of output required to secure its revenue stream.<br>The Private Partner generally assumes the risk of all maintenance, including periodic and preventative maintenance, emergency maintenance work, work stemming from design or construction errors and all rehabilitation work (including latent defects).<br>Maintenance events affecting the availability of the facility and impacting on supply are generally scheduled by agreement with the Contracting Authority and scheduled maintenance may be prohibited during times of peak demand.<br>The Contracting Authority generally | The Contracting Authority should take time to ensure that the raw water supply agreement properly defines the thresholds for the supply of water into the facility and the Private Partner's obligations from that point.<br>Failure to get the thresholds right for the project effectively transfer risk back to the Contracting Authority.<br>Additionally, the arrangements should properly define the maintenance obligations on the Private Partner to ensure that the facility is properly maintained throughout the life of the project, to ensure that the facility is in a satisfactory condition in the event of early termination or on expiry of the agreement, at which point the facility will be transferred to the Contracting Authority. The Contracting Authority should also consider whether any long term services or supplies should be secured for the facility.<br>Subject to the requirements of the Private Partner's financing | Generally, the Contracting Authority's role will be limited to defining minimum maintenance requirements, ensuring that these are met and enforcing for rectification if they are not.<br>The Contracting Authority may be required to maintain interconnections with the facility, such as the water supply system. | In developed markets, the involvement of the Private Partner in the operation and maintenance of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the rehabilitation works (construction) phase to ensure the operational life of the facility and that operation and maintenance considerations are appropriately considered in the design of the rehabilitation works.<br>Additionally, in emerging markets, the Contracting Authority should consider its ability to take on responsibility for maintenance following the transfer of the facility on early termination or expiry and whether provisions should be put in place to support the necessary transfer of expertise and/or personnel in the short term. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | retains the risk of certain events impacting the project (such as political risk and regulatory / change in law risk). In this case, the Contracting Authority may be required to provide relief to the Private Partner for the impacts on the project of additional maintenance required by those events (including the additional costs of maintenance), but responsibility for performance of the maintenance remains with the Private Partner.<br>The Contracting Authority may retain the maintenance risk associated with the infrastructure connecting with the facility, such as the water supply pipe delivering the water to the facility's delivery point. It is usual for the Contracting Authority to also assume responsibility for all maintenance of the facility on its transfer to the Contracting Authority at the end of the term. | parties, the Contracting Authority should consider specific requirements in relation to the use of property damage insurance to reinstate the facility.<br>Adequate performance by the Private Partner will be further enforced by ensuring that the payment mechanism reflects the Private Partner's ability to meet the contractual levels of volume, availability and quality and by including termination triggers for material performance shortfalls.<br>There may also be specific transfer provisions providing for the condition of the facility to be assessed during the last few years of the project. The Private Partner will then be required to carry out any remedial work necessary to ensure that the facility meets the required standards on the date of transfer to the Contracting Authority at the end of the term. | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and<br>- other force majeure events which typically cannot be insured (often described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be entitled to an extension of time (but sometimes only over an agreed threshold) and additional costs only in the event of a political force majeure, but an extension of time only in the event of a natural force | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On availability based projects, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (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).<br>Alternatively the project may be subject to abatement but excused from non-performance/breach. | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, in some jurisdictions the Contracting Authority may be required to fully compensate the Private Partner for debt owed to the lenders. Whether the debt will be kept whole in such a scenario, will be a | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a "natural" force majeure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of 'political force majeure' will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is 'natural' or 'political'. In the event of natural force majeure, the Private Partner would be entitled to the tariff to the extent of its availability. If it is a political force majeure event, the Private Partner would be entitled to the tariff on the basis of the availability of the plant as tested by the last availability test.<br>Where it is a prolonged force majeure event, the Contracting Authority would generally have the right to terminate. The Private Partner would generally expect to receive more equity return than for termination for a 'natural' force majeure event. | | key area of focus for prospective lenders as part of their initial credit assessments. | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Emerging | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitle the Private Partner to relief.<br>Typical events could include:<br>- natural force majeure events, which typically can be insured (e.g. lightening, fire, earthquake, tsunami, flood, cyclone, or other natural calamity/act of God, epidemic or plague, accidents or explosions etc), and<br>- other force majeure events which typically cannot be insured (often described as 'political force majeure' events) (e.g. war within the jurisdiction, strikes / protest, terrorism, riots etc).<br>The Private Partner will generally be entitled to an extension of time (but sometimes only over an agreed threshold) and additional costs only in the event of a political force majeure, but an extension of | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On availability based projects, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of availability without incurring performance penalties). | See comments on the risk of uninsurability for a water distribution project in emerging markets. | On emerging market transactions, the Contracting Authority often does not provide any compensation for termination arising from a "natural" force majeure, on the grounds that this should be insured. In the event of prolonged force majeure, the Contracting Authority will be entitled to terminate. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | time only in the event of a natural force majeure.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this risk for events of 'political force majeure' will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During the operation period, the impact of the force majeure will depend on whether the force majeure is 'natural' or 'political'. In the event of natural force majeure, the Private Partner would be entitled to the tariff to the extent of its availability. If it is a political force majeure event, the Private Partner would be entitled to the tariff on the basis of the availability of the plant as tested by the last availability test.<br>Where it is a prolonged force majeure event, the Contracting Authority would generally have the right to terminate. The Private Partner would generally expect to receive more equity return than for termination for a 'natural' force majeure event. | | | |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Developed | | X | | The Contracting Authority would specifically prohibit the Private Partner from claiming additional costs for general currency and interest rate fluctuations.<br>The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks. | In developed markets, the risk of currency fluctuations and interest rates is generally not substantial enough to require the Contracting Authority to provide support. |
| Exchange and interest rate risk | The risk of currency fluctuations and or the interest rate over the life of a project | Emerging | | | X | The Contracting Authority would specifically prohibit the Private Partner from claiming additional costs for general currency and interest rate fluctuations, although certain elements of the tariff may be adjusted for fluctuations between the local currency and USD.<br>The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible in that market. | As the water tariffs will be paid in local currency, the Contracting Authority may retain the risk of devaluation of the local currency to the extent that such devaluation impacts on the economic viability of the project (due to the need to pay for foreign currency imports and | In emerging markets, the risk of currency fluctuations is often a key bankability issue. Issues of convertibility of currency and restrictions on the repatriation of funds are also bankability issues upon termination in emerging markets. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | | service foreign currency debt). | |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable (ie not available on commercially reasonable terms in the international insurance market) there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable and insurance coverage should be less volatile than for emerging markets, this is typically a shared risk. However, in some developed jurisdictions uninsurable risk may remain with the private sector.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Emerging | | | X | Where risks become uninsurable (ie not available on commercially reasonable terms in the international insurance market) there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the Private Partner will typically have to bear this risk.<br>If the uninsured risk is fundamental to the project (e.g. physical damage cover for major project components) then the Private Partner may need an exit route | As part of the feasibility study, the Contracting Authority and Private Partner should consider whether insurance might become unavailable for it given the location and other factors relevant to the project. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | On emerging market transactions, the Contracting Authority typically does not take the risk of uninsurability arising on the project, although there are good grounds to say that it should do so if the Private Partner has no protection for the consequences of a natural force majeure that becomes uninsurable. |

| Risks Category | Description | Variable | Allocation: Public | Private | Shared | Rationale | Mitigation: Measures | Government Support Arrangements: Issues | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | (e.g. force majeure termination) if it cannot reinstate the project on an economic basis. | | | |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the lease or licence and access to necessary sites and the network necessary to allow the Private Partner to fulfil its obligations. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project. | Emerging | X | | | The Contracting Authority typically bears responsibility for political events outside the Private Partner's control.<br><br>This concept may include any act or omission of any Government entity which may have a material adverse impact on the Private Partner's ability to perform its obligations and/or exercise its rights under the concession.<br><br>The Private Partner would expect not only compensatory relief but also an ability to exit the project if the political risks continue for an unacceptable duration. | The Contracting Authority will need to ensure that other Government departments keep in line with the project objectives and will need to actively manage the various stakeholders in the project to achieve this. | This type of issue will typically lead to a termination right for the Private Partner and the Contracting Authority will need to stand behind debt and equity, potentially with a Government guarantee. | Investors and commercial lenders may also be able to cover themselves by use of political risk insurance, leaving this risk to be managed by the insurer against the Contracting Authority. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained.<br><br>Change in taxation. | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br><br>The Private Partner will be kept whole in respect of changes in law which are: (i) Discriminatory (to the project or the Private Partner) (ii) Specific (to the water sector, for example a change in mandatory standards for water quality, or to PPP projects in the jurisdiction) or (iii) general change in law affecting capital expenditures.<br><br>A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br><br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should be reflected in general inflation).<br><br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | The Contracting Authority should be mindful of how it will fund these specific/discriminatory changes should they arise. | 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. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | Private Partner to a Variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred. | | | |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be maintained. | Emerging | X | | | The risk of change in law sits with the Contracting Authority. The Private Partner will be entitled to claim for any increased costs and in relation to delay arising from a change in law.<br>A change in law is generally specifically defined and may include:<br>(i) any law coming into effect after the effective date, or existing law being modified after the effective date; (ii) any required Private Partner consent being terminated or the introduction of conditions upon renewal which materially adversely affect the Private Partner; (iii) the unjustified refusal to grant a permit and (iv) a change in water quality standards. | The Contracting Authority will need to ensure that various Government departments keep the project in mind when passing new laws to ensure that the Private Partner is not inadvertently affected.<br>The various Government departments that may impact on the project should therefore be cognisant of the risk allocation in the project when passing laws and regulations that may have an impact on it. | Some projects may also provide for a stabilisation 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 concession agreement.<br>However, the stabilisation method is generally not favoured by Governments or NGOs (e.g. because of the concept of Private Partner immunity from updates to environmental laws, for example). | In emerging markets:<br>(a) the Private Partner is likely to have a greater level of protection from changes in law to reflect the greater risk of change (including both likelihood and consequences) and in order to attract investors to the project. In that way, the Contracting Authority would be expected to assume more change in law risk than compared to a project in a developed market;<br>(b) the Private Partner does not generally have to prove that it could have anticipated the change in law, provided that it occurred after an agreed base date; and<br>(c) changes in the environmental, safety and health law which are no more onerous than those prevailing internationally and changes in the exchange rate between local currency and USD are often specifically excluded as changes in law. This reflects both the Contracting Authority's expectations about the Private Partners (ie as international developers, contractors and operators) and the developing nature of legislative reform in these areas. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be borne by the | During the concession term, the Private Partner will look to be kept neural in respect of both international and local inflationary costs through an | The payment mechanism may account for inflation costs by incorporating the consumer price index into | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | Contracting Party.<br>On availability-based projects, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as labour and chemicals). | appropriate inflation uplift or tariff adjustment regime. | the monthly payments. | markets. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Emerging | X | | | Inflation risk is typically borne by the Contracting Authority.<br>On availability-based projects, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component (to reflect variable financing costs and variable inputs such as labour and chemicals). | 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. | The payment mechanism incorporates indexation for inflation costs by incorporating the consumer price index into the monthly payments. | The fluctuation of inflationary costs is a greater risk in emerging markets than it is in developed markets and the Private Partner's expectation will be that this risk is borne and managed by the Contracting Authority during the concession term.<br>Indexation for inflation is typically linked to local (sometimes in conjunction with an international) consumer index. In emerging markets, local consumer index lack independence and are sometimes manipulated by the Government for fiscal and social reasons. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Bids are awarded on the basis of the Private Partner's technical expertise and financial resources. The Contracting Authority will want to ensure that the sponsors, particularly founding sponsors, to whom the project is awarded remain involved for a minimum period of time. | Contracting Authority will limit Private Partner's ability to change shareholding for a specified minimum period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set out proposals for governance of Private Partner.<br>Where Private Partner proposes a change in shareholding within that lock-in time, Contracting Authority may consent where the new owners meet specified criteria regarding equivalent | | In developed markets, the lock in periods and conditions are typically less restrictive than in developed markets with Contracting Authorities' being more comfortable with changes in shareholding to equivalent owners. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | technical expertise and financial resources. | | |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Emerging | | X | | Bids are awarded on the basis of Private Partner's technical expertise and financial resources. The Contracting Authority wants to ensure that the sponsors, particularly founding sponsors, to whom the project is awarded remain involved for a minimum period of time. | Contracting Authority will limit Private Partner's ability to change shareholding for a specified minimum period (i.e. lock-in for construction period).<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | In emerging markets, the lock in periods and conditions are typically more restrictive and longer than in developed markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology. | Developed | X | | | The technology requirements will usually be specified by the Contracting Authority in the bid phase and agreed with Private Partner in the agreements. | The Contracting Authority should do a full assessment of relevant technologies as part of the project feasibility study to ensure that the selected technologies are appropriate to the conditions of the project and market tested.<br>The Contracting Authority may impose an obligation on Private Partner to seek continuous improvement in specified areas, for example in monitoring and metering.<br>The Private Partner may be obliged to operate in accordance with best industry practice which may also impose some obligation on the Private partner to take on improvements in technology. | The concession agreement 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. | In developed markets, this has not been typically addressed but is expected to increase with technological advances, for example smart metering. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces an established technology. | Emerging | X | | | The technology requirements will usually be specified by the Contracting Authority in the bid phase and agreed with Private Partner in the agreements. | The Contracting Authority should do a full assessment of relevant technologies as part of the project feasibility study to ensure that the selected technologies are appropriate to the conditions of the project and market tested. The Private Partner may be obliged to operate in accordance with best industry practice which may also impose some obligation on the Private partner to take on improvements in technology. | The concession agreement 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. | In emerging markets, this risk is not typically addressed in the project documents. As project implementation and execution are often delayed in emerging markets, the risk of technology change could be considered higher than in developed markets. |
| Early termination | The risk of a project being terminated before | Developed | | | X | The Contracting Authority can face the following risks on expiry or termination of | The Contracting Authority should ensure that there is no | The lenders will require direct agreements with | In developed markets, early termination compensation is |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| (including any compensation) risk | the expiry of time and the monetary consequences of such termination | | | | | the concession period:<br>(a) uncertainty about the type and timing of transfer of the assets (either back to the Contracting Authority or to a replacement Private Partner);<br>(b) re-delivery of poor condition or out-of-specification assets;<br>(c) receiving inadequate compensation for non-performance and early termination (if applicable);<br>(d) inability to obtain the benefit of supply/manufacturer warranties; and<br>(e) other related political and public relations issues.<br>The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common for the senior debt to be guaranteed as a minimum in every termination scenario (in some jurisdictions, with the exception of termination for Private Partner default), | uncertainty about the Private Partner's obligations at the end of the concession period (due to expiry or termination).<br>These matters can be addressed in the concession agreement and should deal with redelivery obligations, compensation (either on a net book value or present market value basis), access to warranties and guarantees and transfer of operation and maintenance know-how.<br>A further key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | and for rights of set-off below that figure to be restricted. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | | |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Emerging | | | X | The Contracting Authority can face the following risks on expiry or termination of the concession period:<br>(a) uncertainty about the type and timing of transfer of the assets (either back to the Contracting Authority or to a replacement Private Partner);<br>(b) re-delivery of poor condition or out-of-specification assets;<br>(c) receiving inadequate compensation for non-performance and early termination (if applicable);<br>(d) inability to obtain the benefit of supply/manufacturer warranties; and<br>(e) other related political and public relations issues.<br>The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future | The Contracting Authority should ensure that there is no uncertainty about the Private Partner's obligations at the end of the concession period (due to expiry or termination).<br>These matters can be addressed in the concession agreement and should deal with redelivery obligations, compensation (either on a net book value or present market value basis), access to warranties and guarantees and transfer of operation and maintenance know-how.<br>A further key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The covenant risk of the Contracting Authority may require a guarantee from a higher level of Government to guarantee the level of compensation payable on termination.<br>The lenders will require direct agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | In emerging markets, there may also be sovereign guarantees which support the Contracting Authority's payment obligations.<br>Political risk insurance may be available and is likely to be sought to cover the risk of the Contracting Authority or Government guarantor defaulting on its payment obligation. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br><br>It is common 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. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | | |

# Risk Matrix 12: Solid waste collection, disposal, landfill and recycling (DBFO)

- New waste to energy plant as a DBFO project where the waste disposal capacity is sold to a state owned single buyer but with the ability to sell capacity to third parties wishing to dispose of commercial and industrial waste
- Assumes that the procuring entity identifies the site on which the project will be built
- Project scope does not include associated infrastructure, such as water pipelines and electricity transmission which will be provided by the state owned buyer (and specifically ensures that the state ensures an appropriate site. Grid connection works may form part of the infrastructure work however
- Technology is neutral in this matrix as there is such a variety of waste to energy solutions from incineration to fuel production/gasification and generating electricity from biogas from waste. Technologies are usually (but international practice varies) not specified by the procuring entity but do result in different technological risks for the project
- There are markets where waste to energy is emerging not only as a means to handling and disposal of solid waste but as a sustainable energy source. Projects in these markets are not being structured as per developed markets based on “gate fee” disposal cost models but more on an “availability” basis for the conversion of fixed specification solid waste into guaranteed energy level outputs. Essentially, a power project
- Key risks
  - Environmental and social risk
  - Design risk
  - Resource or input risk

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| Land purchase and site risk | The risk of acquiring title to the land to be used for a project, the selection of that site and the geophysical conditions of that site.<br>Planning permission.<br>Access rights.<br>Security.<br>Heritage.<br>Archaeological.<br>Pollution.<br>Latent defects. | Developed | X | | | The Contracting Authority bears the principal risk as it is best placed to select and acquire the required land interests for the project.<br>The Contracting Authority would generally be responsible for providing a "clean" site, with no restrictive land title issues, and existing utilities and contamination either dealt with or fully surveyed and warranted. Existing assets proposed to be used in the project should also be fully surveyed and warranted. The Private Partner may take some risk for dealing with adverse conditions revealed by surveys but other unforeseeable ground risks (e.g. archaeological risks) are likely to be held by the Contracting Authority.<br>The Contracting Authority should also consider the impact that the project will have on neighbouring properties and trades and may need to retain this risk of unavoidable interference.<br>That said, there may be some areas where risk will be shared with the Private Partner. Whilst the Contracting Authority may be able to secure the project site, the location suitability may be dependent on the Private Partner's design solution (such as availability of water and power required for the proposed waste treatment process). | The Contracting Authority should undertake detailed ground, environmental and social assessments and should disclose such information to the Private Partner as part of the bidding process.<br>The Contracting Authority should, to the greatest extent possible, ensure that it has a complete understanding of the risks involved in securing the site and the site constraints that will impact on the construction and operation of the facility.<br>The Contracting Authority should also manage any indigenous land rights issues that may impact on the use of the site.<br>Prior to awarding the concession the Contracting Authority could (through legislation and a proper consultation process) limit the ability for potential land right owners or neighbouring properties and trades to raise claims on the land and/or for injurious affection. | The Contracting Authority may need to use its legislative powers to secure the site (e.g. through expropriation / compulsory acquisition).<br>Even where you have a legally clear site, Government enforcement powers may be needed to properly secure the site for the private sector. There may be historic encroachment issues that the Private Partner cannot be expected to deal with. | Land rights and ground conditions in developed markets are typically more established and risks can be mitigated with appropriate due diligence with relevant land registries and utility records.<br>The Private Partner's obligations with regards to indigenous rights are generally well legislated in developed markets, for example requirement to enter into indigenous land use agreements under native title legislation in Australia and the equivalent under first nations law in Canada. |
| Environmental and social risk | The risk of existing latent environmental conditions affecting the project and the subsequent risk of damage to the environment or local communities.<br>The risk that all necessary statutory and environmental permits and consents for the processing and treatment of relevant waste sources have been obtained. | Developed | | X | | The Private Partner will have primary responsibility to accept the project site in an "as is" condition, subject to Contracting Authority's disclosure of relevant matters, and manage the environmental and social strategy across the project, as well as obtaining all required licenses, permits and authorizations as necessary.<br>Existing environmental risks of the site prior to the Private Partner's acceptance of the site that have not been disclosed or within the knowledge of the Private Partner prior to commercial close will be deemed to be the responsibility of the Contracting Authority. See comments on "Land purchase and site risk" for a waste management BOT project in developed markets.<br>Social risks, insofar as they may involve | The Contracting Authority should conduct the necessary due diligence in order to ascertain the environmental fitness of the site and disclose all known environmental issues to the Private Partner.<br>The Contracting Authority will be required to review all environmental plans put forth by the Private Partner, to ensure that such plans will be adequate to appropriately manage the risks of the project. | The Contracting Authority will need to take meaningful steps both before and during the project to manage social impacts of construction and operation.<br>Investors and lenders may expect to see a plan to see how these aspects are dealt with and this may need to be contractualised. | Environmental scrutiny is increasing even in emerging markets, as both Private Partners and Contracting Authorities have come under increasing burdens to develop sound environmental and social risk management plans before construction begins. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | indigenous groups, will be the responsibility of the Contracting Authority.<br>The Private Partner will procure the necessary consents, including environmental permits, at its own expense.<br>The Private Partner will be required to comply with the terms of and observe all conditions attaching to any and all necessary consents and any planning agreements insofar as they may apply to the site from time to time. This includes a requirement to obtain, implement and maintain and renew as necessary all necessary consents. | | | |
| Design risk | The risk that the project has not been designed adequately for the purpose required.<br>Feasibility study.<br>Approval of designs.<br>Changes to design. | Developed | | X | | The Private Partner will have principal responsibility for adequacy of the design of the facility and its compliance with the output / performance specification. | The Contracting Authority will often broadly draft the Private Partner's design and construction obligations to satisfy the output specifications and ensure compliance with applicable legal requirements and good industry practice standards. This allows for private sector innovation and efficiency gains in the design and choice of appropriate waste treatment technology.<br>A design review process will allow for increased dialogue and cooperation between the Contracting Authority and the Private Partner; however the mutual review process should not be construed as a reduction or limitation of the Private Partner's overall liability. | | Developed market projects benefit from stable precedent or comparator projects which allow the Private Partner to demonstrate technology to the Contracting Authority. However the use of comparator projects as 'most bankable' can stifle new innovation. |
| Construction risk | Quality assurance standards.<br>Defective material.<br>Latent defects.<br>Interface/project management.<br>Cost overruns where no compensation /relief event applies.<br>Commissioning damage. | Developed | | X | | Private Partner assumes turnkey construction and project management risk. Private Partner is responsible for integrating various aspects of construction such as engineering, civil construction works and technology integration in the waste treatment facility.<br>Private Partner required to construct to specific industry standards to ensure fitness for purpose of the waste treatment facility and to meet certain defined performance guarantees. The facility may be rejected if performance levels are | Private Partner will attempt to address by passing through obligations to the construction contractor.<br>The construction contractor will be liable for performance damages in relation to underperformance of the completed facility and the facility may be rejected if performance levels are significantly below the contractual requirement.<br>Construction contractor will pay | | |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | IP right breach/infringement.<br>Labour disputes.<br>Subcontractor disputes/insolvency. | | | | | significantly below the contractual requirement and termination payments will become due from the Private Partner.<br>Private Partner takes risk of cost overrun where no compensation/relief event applies. Private Partner will takes the risk on delay damages for programme overruns.<br>Private Partner takes labour dispute risk unless political.<br>Private Partner takes risk of IP right infringement. | delay damages for programme overruns. | | |
| Completion (including delay and cost overrun) risk | The risk of commissioning the asset on time and on budget and the consequences of missing either of those two criteria.<br>Testing.<br>Performance. | Developed | | X | | The Private Partner will bear principal responsibility for delay and cost overrun risk, and will typically manage this through the engagement of a suitable EPC contractor.<br>The principal risk arising out of delay will be the loss of expected gatefee revenue, the ongoing costs of financing construction, extended site costs and continuing landfill costs for waste not treated at the facility during the delay period.<br>The Private Partner is best placed to integrate complex civil works, the delivery and commissioning the facility, operations, and preventative and lifecycle maintenance to ensure a reliable service for an efficient price. This may be managed through a single EPC joint venture or by the Private Partner managing a series of works, supply and operation/commissioning contracts.<br>The Private Partner will be expected to demonstrate adequate system performance before it is given permission to operate the system. Waste management BOT projects require complex commissioning and testing regimes given the intricacies involved in ensuring that the process plant will meet the necessary reliability and performance requirements of the output specifications. | The combination of (i) incentives or penalties for timely completion and (ii) the implementation of a “longstop date” (a date which is pegged to a prescribed time period after the scheduled completion date) will create the necessary tension to incentivise timely completion while allowing the Private Partner a reasonable amount of time to meet its contractual responsibilities in spite of delays before the Contracting Authority can terminate the project. | The Contracting Authority may have a critical role to play at stages of the construction, testing and commissioning process in terms of ensuring that any rights that it has to comment on design development and testing results do not adversely delay the project.<br>The Contracting Authority may allow for certain relief events, delay events or force majeure events where delays or cost overruns have arisen from either the fault of the Contracting Authority, or no-fault events.<br>Similarly the Contracting Authority may need to take responsibility for delays caused by the failure of public bodies to issue necessary consents in good time. | In developed markets, enforcement of construction deadlines and budgets may be easier as the Private Partner will typically have more experience and reliable resources, but Contracting Authority will need to be wary of technology risk if they are being offered processes that are new or innovative and not yet fully deployed for a meaningful test period on a commercial scale. |
| Performance/ price risk | The risk that the asset is able to achieve the output specification metrics and the price or cost of doing so. | Developed | | X | | The Private Partner bears the risk of meeting the performance specification.<br>However, the Contracting Authority is responsible for enforcing the regime and for ensuring that the output specifications | The onus falls upon the Contracting Authority to draft attainable standards based on relevant market data and policy objectives. Performance based | Where certain performance indicators cannot be met due to actions by the Contracting Authority or unforeseen | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable performance |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | Market Comparison Summary |
| | Damage Pollution Accidents.<br>Meeting handback requirements<br>Health and Safety<br>Equipment becoming prematurely obsolete.<br>Expansion. | | | | | are properly tailored to what the Private Partner can deliver. Consideration needs to be given to the ability of the Private Partner to achieve the necessary performance levels, and the appropriateness of metrics given the nature of the project. | on increased recycling, landfill reduction, availability, and quality of service can be measured against pre-determined schedules or standards. | circumstances, the Private Partner may be eligible to seek relief or compensation. | specifications and models. |
| Resource or input risk | The risk that the supply of sufficient quantities of waste required for the expected output of the facility is interrupted or the cost increases. | Developed | | | X | The Private Partner bears the principal responsibility to ensure an uninterrupted supply of inputs/resources for the project and to manage the costs of those inputs.<br>If the Contracting Authority cannot supply contracted tonnages of waste the Private Partner may be required to procure substitute waste.<br>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 be allowed to monitor the supply of required resources, and may allow for the Private Partner to substitute resources if necessary.<br>Where the contractor secures substitute waste then the Contracting Authority shall pay the difference or losses incurred by the Private Partner. | Monthly payments to the Private Partner may include certain calculations that could alleviate uncontrollable cost increases due to increases in waste costs/reduced gatefee that would otherwise be borne by the Private Partner. | If Contracting Authority takes risk on delivery of waste then it will also take risk on the characteristics of the waste too. It needs to be confident that it can manage this risk, or pass it to third party supplier. |
| Demand risk | The availability by both volume and quality of waste or refused derived fuel to a project or the demand for the product of service of a project by consumers/users | Developed | | | X | The default position for waste management BOT projects in developed markets is for the Contracting Authority to retain some risk on waste availability by providing either exclusivity of all waste arising in a local area or by guaranteeing waste tonnages to be delivered at the facility.<br>The Private Partner takes the risk of securing sufficient third party waste to fill additional capacity to make up its revenue base case. | The Contracting Authority should do a full assessment of demand risk and should ensure that the concession agreement appropriately addresses and allocates the risk for everything that will impact on demand.<br>The parties should also develop a comprehensive market strategy for procurement of substitute waste. | As the Contracting Authority will be retaining demand risk, it will need to ensure that it is comfortable (both politically and economically) with demand forecasts. | In developed markets, the Contracting Authority should have access to various data sources to develop realistic and attainable waste arisings and revenue forecasts, such that the Contracting Authority is well placed to manage demand and gatefee risk. |
| Maintenance risk | The risk of maintaining the asset to the appropriate standards and specifications for the life of the project.<br>Increased maintenance costs due to increased waste volumes including third party waste.<br>Incorrect estimates and cost overruns. | Developed | | X | | The Private Partner will have principal responsibility for meeting the appropriate standards regarding maintenance as set out in the output specifications defined by the Contracting Authority.<br>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 project model instances, work stemming from implementing technological or structural | The Contracting Authority should take time to ensure that the output specification properly defines the maintenance obligations on the Private Partner to ensure that the facility remains robust in the event of early termination or expiry of the agreement.<br>The primary role of the Contracting Authority is to properly define the output specifications and level of | Generally speaking, the Contracting Authority's undue interference with the Private Partner's provision of maintenance and rehabilitation services (with the exception of minor management services) reduces the benefits of the BOT project model. | In developed markets, the involvement of the Private Partner in the operation, maintenance and rehabilitation of the project provides several benefits by incentivising greater care and diligence by the Private Partner in the construction phase, and increasing the useful life of the infrastructure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | changes. | services required of the Private Partner.<br>Further, the Contracting Authority may establish a facilities management committee to oversee the Private Partner's performance of the maintenance and rehabilitation services, along with a formal mechanism to discuss and resolve performance related issues.<br>Adequate performance by the Private Partner can be further enforced by ensuring that the payment mechanism considers quality and availability failures. The Contracting Authority will be allowed to adjust payment to the Private Partner based on meeting or failing to meet certain performance standards. There may also be other remedies such as warning notices and right to replace subcontractors. | | |
| Force majeure risk | The risk that unexpected events occur that are beyond the control of the parties and delay or prohibit performance. | Developed | | | X | Force majeure is a shared risk and there will be a fairly well developed list of events that entitles the Private Partner to relief.<br>Typical events include (i) war, armed conflict, terrorism or acts of foreign enemies; (ii) nuclear or radioactive contamination; (iii) chemical or biological contamination; (iv) pressure waves caused by devices traveling at supersonic speeds; or (v) discovery of any species-at-risk, fossils, or historic or archaeological artefacts that require the project to be suspended for a period of time.<br>Force majeure events occurring during construction will also cause a delay in revenue commencement. The ability of the Private Partner to bear this for uninsured risks will be limited, and the Contracting Authority will typically have to bear the risk after a certain period of time or level of cost has been exceeded.<br>During operations, the impact of the force majeure event will depend on whether the project is availability based (where relief from KPI penalties may be required) or is demand-based (where an element of | Project insurance (physical damage and loss of revenue coverage) is the key mitigant for force majeure risks that cause physical damage.<br>On an availability based project, the risk of disruption as a result of no-fault events could be mitigated by relaxing the performance thresholds (e.g. requiring a lower level of acceptable service, which then allows the Private Partner to take the risk of a certain number of day-to-day adverse events typical to a project of this nature but without incurring performance penalties).<br>The risk of missing recycling or landfill reduction targets would shift back to the Contracting Authority. | Generally speaking, where parties are unable to agree on a way forward following a force majeure event, an amount of compensation should continue to be payable by the Contracting Authority to the Private Partner in order to service the Private Partner's debt obligations during the course of the event. Where the project is terminated, the Contracting Authority may be required to fully compensate the Private Partner for debt owed to senior lenders. Whether the debt will be kept whole in such a scenario, will be a key area of focus for prospective lenders as part of their initial credit assessments. | On developed market transactions, the Contracting Authority typically compensates the Private Partner, only for its outstanding debt (but not for its expected rate of return) for termination arising from a "natural" force majeure. |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | gatefee subsidy may be required). | | | |
| Exchange and interest rate risk | The risk of currency fluctuations and/ or the interest rate over the life of a project | Developed | | X | | The Private Partner would look to mitigate this risk through hedging arrangements under the Finance Documents, to the extent possible or necessary in that market. | Exchange and interest rates risks are typically not accounted for beyond the Private Partner's own hedging arrangements. | The Contracting Authority is not expected to assist the Private Partner in mitigating such risks. | In developed markets, the risk of currency fluctuations and interest rates is not substantial enough to require the Contracting Authority to provide support. |
| Insurance risk | The risk that insurance for particular risks is or becomes unavailable. | Developed | | | X | Where risks become uninsurable there is typically no obligation to maintain insurance for such risks.<br>If an uninsured risk event occurs, the parties may agree to negotiate in good faith risk allocation going forward, while allowing for the termination of the project if an agreement cannot be reached. The Contracting Authority may choose to assume responsibility for the uninsurable risk, while requiring the Private Partner to regularly approach the insurance market to obtain any relevant insurance.<br>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. termination of the project on the same terms as if it were an event of force majeure) if it cannot reinstate the project on an economic basis. | As part of the feasibility study the Contracting Authority and Private Partner should consider whether insurance might become unavailable for the project given the location and other relevant factors. | The Contracting Authority may need to consider whether it stands behind unavailability of insurance, in particular where this has been caused by in-country or regional events or circumstances. | In developed market transactions, as neither party can better control the risk of insurance coverage becoming unattainable, this is typically a shared risk.<br>Where the cost of the required insurance increases significantly, the risk is typically shared by either having an agreed cost escalation mechanism up to ceiling or a percentage sharing arrangement - this allows the Contracting Authority to quantify the contingency that has been priced for this risk.<br>In circumstances where the required insurance becomes unavailable, the Contracting Authority is typically given the option to either terminate the project or to proceed with the project and effectively self-insure and pay out in the event the risk occurs. |
| Political risk | The risk of Government intervention, discrimination, seizure or expropriation of the project.<br>Public sector budgeting. | Developed | X | | | The Contracting Authority will bear responsibility for political events outside the Private Partner's control, and the Contracting Authority will be responsible should it fail to continually provide the Private Partner with the license and access to the system and surrounding lands necessary to allow the Private Partner to fulfil its obligations. | The Contracting Authority will outline certain political events as delay events, compensation events excusing causes (relief from payment deductions) that involve a breach of obligations or interference by the Contracting Authority with the project. | This type of issue will typically lead to a termination event where the Contracting Authority will need to stand behind debt and equity. | The type of political risk events that occur in developed markets are likely more subdued and less drastic than emerging markets. As such, political risk insurance is not typically obtained. |
| Regulatory/change in law risk | The risk of law changing and affecting the ability of the project to perform and the price at which compliance with law can be | Developed | | | X | The risk of change in law sits mostly with the Contracting Authority but there will be a degree of risk sharing in the following manner:<br>The Private Partner will be kept whole in respect of changes in law which are: (i) | Change in law risk that is retained by the Private Partner may be mitigated by indexation provisions (on the basis that general changes in law will affect the market equally and should | Past concession models (including that developed in the UK) used to require the Private Partner to assume, and price for, a specified level of general | Projects in the waste management sector involve a close interaction with environmental regulation. A change in environmental legislation may have general |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | **Description** | **Variable** | Public | Private | Shared | Rationale | Measures | Issues | |
| | maintained.<br>Change in taxation. | | | | | Discriminatory (to the project or the Private Partner) (ii) specific (to the waste sector) or (iii) general change in law affecting capital expenditures. A change in law is often subject to a de minimis threshold before the Private Partner is entitled to compensation<br>The Private Partner will not be compensated for general changes in law that only affect operational expenditure or taxation (i.e. affect the market equally). Changes in law will always entitle the Private Partner to a Variation where this is necessary to avoid an impossible obligation. If this cannot be achieved the Private Partner will typically be entitled to terminate as if a Contracting Authority breach had occurred.<br>In recognition that the environmental legislative landscape has shifted quickly in recent years practice has developed in the UK for identifying 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 the Private Partner or its EPC contractor to price it. Changes relating to these items will be the responsibility of the Contracting Authority. | be reflected in general inflation).<br>Change in law risk may also be mitigated where there is an ability to pass back changes in the tariff charged on the project. This is less commonly available on waste management BOT projects which tend to be structured on an availability-payment basis rather than a demand basis.<br>Some projects only permit the Private Partner to claim relief for general changes in law occurring after completion of construction. This approach may be justified if the country's legal regime ensures that the prevailing legal regime at the start of construction is fixed until the works are complete (i.e. does not operate retrospectively to projects in progress). | 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 SOPC/WIDP 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 gatefee may be possible but this may have a detrimental effect on achieving recycling/landfill diversion targets. | application but may have a disproportionate effect on the waste sector. For this reason some waste management BOT projects have adapted the standard definitions of discriminatory/specific change in law to include any changes in law having such an effect. |
| Inflation risk | The risk that the costs of the project increase more than expected. | Developed | X | | | Inflation risks during construction are typically borne by the Private Partner, while inflation risks during the concession term will typically be primarily borne by the Contracting Authority.<br>On availability-based projects, during the concession term, the availability payment will typically include both a fixed component (where debt has been hedged) and a variable component that will include an escalation factor that accounts for rises in costs as defined by the consumer price index. | During the concession term, 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. | The payment mechanism may account for inflation costs by incorporating the consumer price index into the monthly payments. | In developed markets, inflation is typically minimal and does not experience fluctuations to the extent of emerging markets. |
| Strategic risk | Change in shareholding of Private Partner.<br>Conflicts of interest between shareholders of Private Partner. | Developed | | X | | Contracting Authority wants to ensure that the Private Partner to whom the project is awarded remains involved.<br>Bid awarded on basis of Private Partner's technical expertise and financial resources therefore sponsors should remain involved. | Contracting Authority will limit Private Partner's ability to change shareholding for a period (i.e. lock-in for construction period) and thereafter may impose a regime restricting change in control without | | In developed markets the Private Partners' desire for certainty of involvement of key participants will need to be balanced with the private sector's requirements for flexibility in future business |

| Risks | | | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Variable | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | | consent or where pre-agreed criteria cannot be met.<br>Pre-tender proposal should set out proposals for governance of Private Partner. | | plans, particularly in the equity investor markets. |
| Disruptive technology risk | The risk that a new emerging technology unexpectedly displaces the established technology used in a particular waste treatment process. | Developed | | | X | Where the waste treatment facility has been constructed and is operating there is less risk of disruptive technology affecting the project.<br>Where the waste treatment facility has not yet been completed and commissioned, disruptive technology becomes more of an issue if the procuring Authority is aware of new and more competitive technology which they can use to drive the cost down. This requirement places additional constraints on the Private Partner and the possible profits of the project.<br>There may be a wider risk if disruptive technology (or change in law) leads to a substantial reduction in the volume of waste available to the facility. | The Private Partner can mitigate the impact of disruptive technology by ensuring that it, and the EPC contractor, are aware of and have access to up to date and efficient technology. | | Established technologies are most likely to attract commercial lending terms as banks are keen to see tested operational projects as a benchmark. New technologies in emerging markets will potentially be attractive to Contracting Authorities but it will be difficult to attract commercial lenders. |
| Early termination (including any compensation) risk | The risk of a project being terminated before the expiry of time and the monetary consequences of such termination | Developed | | | X | The level of compensation payable on early termination will depend on the reasons for termination and typically for:<br>(1) Contracting Authority default – the Private Partner would get senior debt, junior debt, equity and a level of equity return;<br>(2) Non-default termination – the Private Partner would get senior debt and equity return; and<br>(3) Private Partner default – (a) Where the project cannot be retendered (due to political sensitivity or a lack of interested parties) the Private Partner would typically be entitled to an amount equal to the adjusted estimated fair value of future payments, less the costs of providing the services under the project/concession agreement. (b) Where the project can be retendered, the Private Partner would be entitled to the amount that a new private partner would pay for the remaining term of the concession, less any costs incurred by the Contracting Authority during the retendering process.<br>It is common for the senior debt to be guaranteed as a minimum in every | A key mitigant is to make sure the termination triggers are not hair triggers and that there are adequate well-defined routes for each party to remedy any alleged default. | The lenders will require direct agreements/tri-partite agreements with the Contracting Authority giving the lenders step-in rights in the case of the Contracting Authority calling a default termination or in the event of the Private Partner being in default under the loan documentation. The lenders would typically be given a grace period to gather information, manage the project company and seek a resolution or ultimately novate the project documents to a suitable substitute concessionaire. | Early termination compensation is well defined and political risk insurance is not typically obtained due to a lesser risk of the Contracting Authority defaulting on its payment obligations. |

| Risks | Description | Variable | Allocation | | | | Mitigation | Government Support Arrangements | Market Comparison Summary |
|---|---|---|---|---|---|---|---|---|---|
| Category | | | Public | Private | Shared | Rationale | Measures | Issues | |
| | | | | | | termination scenario, and for rights of set-off below that figure to be restricted. While it may seem that project lenders are therefore not significantly exposed to a project default, they would not typically have the right to call for a termination in these circumstances, and so they are still motivated to make the project work to recover their loan if the Contracting Authority chooses not to exercise its termination rights. | | | |

ISBN 978-0-9946284-1-1