Understanding Power Purchase Agreements

Understanding Power Purchase Agreements – Version 1.3

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with any questions regarding this publication

Understanding Power Purchase Agreements

UNITED STATES DEPARTMENT OF COMMERCE
The Secretary of Commerce
Washington, D.C. 20230

In June 2013, President Obama launched Power Africa with the intention to double access to power in sub-Saharan Africa, where more than two-thirds of the population lives without electricity. Power Africa set out to catalyze investment in Africa's power sector by working with the private sector, partner governments, and international organizations to remove obstacles to developing power projects. As part of this effort, Power Africa's partners concluded that reducing misconceptions about power purchase agreements (PPAs) could shorten the multi-year negotiations associated with these agreements.

Power Africa set out to accelerate the PPA negotiation process through an improved understanding of the best practices used in structuring these complex agreements. The U.S. Department of Commerce, through our Office of General Counsel's Commercial Law Development Program, and the African Development Bank, through its African Legal Support Facility, led the effort, with funding from the U.S. Agency for International Development.

Over the course of just nine months, we were able to gather critical insights from African and international stakeholders and bring together leading experts to translate those insights into a plain-language handbook. "Understanding Power Purchase Agreements" established a common understanding of what is required for a functional and financeable PPA. Its publication is a significant step toward achieving President Obama's goal of increasing investment in power projects in Africa.

Power Africa and its partners expect that this handbook, by enabling better and more predictable PPAs, will help us realize our collective goal of bringing electricity to millions of Africans over the next few years. I am particularly proud of the Department of Commerce's leading role in this impressive international and inter-agency effort. Our successful collaboration is a powerful example of how the shared commercial interests of the United States and Africa can be a force for economic development that improves lives across the African continent.

Penny Pritzker
U.S. Secretary of Commerce

C O N T E N T S

FOREWORD

INTRODUCTION

THE PPA IN CONTEXT

Power Generation Markets 14
The Power Purchase Agreement (PPA) 24
Financing of Power Projects 35
Environmental & Social Requirements 43
Summary of Key Points 46

FINANCIAL PROVISIONS

Introduction 49
Tariff Structures 50
Procurement of Electricity 63
Invoicing and Payments 70
Credit Support for Offtaker Obligations 73
Credit Support for the Project Company's Obligations 79
Tax Exemptions 84
Summary of Key Points 85

RISK ALLOCATION AND MITIGATION

Introduction 88
Development and Construction Phase Risks 89
Operational Phase Risks 100
Other Risks 113
Force Majeure 123
Insurance 127
Summary of Key Points 129

OTHER PPA PROVISIONS

Introduction 132
Resolving Disputes 133
Local Content 139
Confidentiality 140
Boilerplate Provisions 141
Summary of Key Points 143

DEFAULT AND TERMINATION

Introduction 145
Buyer Default 146
Seller Default 148
Post-Termination Obligations 150
Non-default Events 156
Lender Rights 157
Summary of Key Points 163

APPENDIX

Glossary 166
Acronyms 178
Other Resources 182

Foreword

Electricity drives the engine of opportunity in the modern world. It allows our children to study by light. It powers the innovation in our factories. From telecommunications to transportation, power is essential to virtually every aspect of our increasingly dynamic and interconnected world. As a result, investment in power infrastructure must be a part of any strategy for economic development. This is true for both broad economic growth initiatives in emerging countries and targeted rural growth initiatives in developed countries.

The transformational nature of power projects does, however, come with risks. Given that power projects are most essential where there is a power shortage in the market, these projects often represent a pioneering level of investment and financial complexity in these markets. As a result, it has become common place to adopt a durable agreement that cements the predictability and durability that is needed for any long term business venture. This agreement is called the Power Purchase Agreement (**PPA**) and has helped to drive the growth and development of independent power projects around the world.

This handbook is intended to provide an overview of PPAs and the obligations, risks and remedies that are found within them. Our group of authors, all whom contributed their time on a pro-bono basis, includes contributors from governments, development banks, private banks and leading international law firms. Our hope is that by providing perspectives from all sides of the PPA negotiation process, we can present the reader with a balanced understanding of the challenges involved in PPAs and an insight into the practical reality of overcoming these challenges when negotiating these complex agreements. More than anything, we want to communicate to the reader that the key to a successful PPA is to abandon the assumption of an adversarial process and to adopt instead a strategy of cooperation and coordination. It is only through this balanced approach that the risks can be mitigated and the rewards realised for all parties involved.

The handbook was produced using the Book Sprint (http://www.bookSprints.net/) method, which allows for the drafting, editing and publishing of a complete product in just five days. Our journey began with a spirited discourse and quickly progressed to a furious pace of writing with occasional interruptions for the introduction of brilliant ideas and critical insights. There was a surprising amount of consensus on some topics and an unexpected level of debate on others. The outcome is a product that reflects this teamwork rather than the personal opinions of the authors or the institutions that they represent.

We would like to thank our Book Sprint facilitators Faith Bosworth and Laia Ros Gasch for their patient guidance and unwavering leadership. We would also like to thank the offsite Book Sprint team, including Henrik van Leeuwen (illustrator), Raewyn Whyte (proofreader) and Juan Carlos Gutiérrez Barquero and Julien Taquet (Technical Support). We are especially thankful for the strategic planners that helped conceive this program: René Post (Book Sprints), Toyin Ojo (African Legal Support Facility) and Mohammed Loraoui (Commercial Law Development Program). We would also like to recognise the funding and support of the United States Agency for International Development and the African Legal Support Facility.

This handbook is intended to reflect the vibrant nature of the Book Sprint process and serve not simply as a reference but also as a jumping-off point for further discussion and scholarship. The handbook is issued under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (CC BY NO SA) which allows anyone to copy, excerpt, rework, translate and re-use the text for any non-commercial purpose without seeking permission from the authors, so long as the resulting work is also issued under a Creative Commons License. The handbook is available in electronic form and printed form (English and French). It can be used as an online interactive resource. Many of the contributing authors are also committed to working within their institutions to adapt this handbook for use as the basis for training courses and technical assistance initiatives.

Bringing electricity to underserved communities is a rare example of a universally-held ambition in a world filled with competing development priorities. Governments, private companies, private banks and development institutions are all working tirelessly towards the goal of electrification. If this handbook can in any way move us towards the shared goal of greater energy access, then we will consider it an unqualified success.

Sincerely,

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Introduction

Electricity is fundamental to economic development and enhancing social welfare. Businesses, industries, homes, schools, hospitals, and other critical infrastructure all require electricity to function effectively. In many emerging markets, there is a significant gap between the demand for and supply of electricity. A huge increase in power generation capacity is needed to bridge this gap. This will require investments in the billions of dollars. National governments are increasingly recognising that partnering with private sector investors is critical for satisfying this capital requirement.

The Power Purchase Agreement, or PPA, is the central contract for any independent power generation project, especially in emerging markets. This handbook explains the context for the PPA and sets out the key considerations for drafting and negotiating the PPA. It represents the collective wisdom of a broad cross-section of practitioners who have been engaged in power project development around the world for decades.

This handbook is intended to provide governments, utilities, investors and other interested stakeholders with a guide to understand:

- The power market and contractual framework of a PPA that operates in that market,
- The considerations involved in securing financing for a power project,
- The tariff structure, purchase obligations and other key financial provisions of a PPA,
- Credit support and security issues for both the seller and buyer under the PPA,
- The risks associated with an independent power project and how such risks are typically allocated and mitigated under the PPA, and
- Other key provisions in the PPA, with a particular focus on provisions related to default and termination.

At its heart, the goal of this endeavor is to provide the reader with an insight not only into those issues that matter most to them, but also a glimpse into the perspectives and motivations of other stakeholders. Often, the most effective means of reaching agreement is putting yourself in the other party's shoes. Such insight can make reaching agreement a far simpler task.

The PPA in Context

Power Generation Markets

The Power Purchase Agreement

Financing of Power Projects

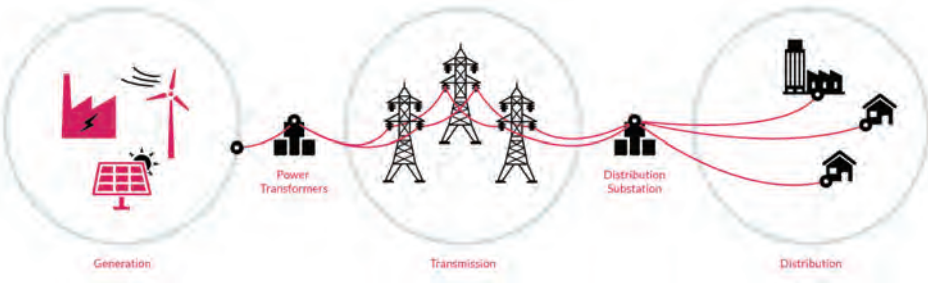
Environmental & Social Requirements

Summary of Key Points

Power Generation Markets

This chapter provides an overview of how our homes and businesses are supplied with the electricity generated by power plants. It highlights the different types of power generation facilities and explains how electricity is bought and sold. It also explains the different players who are involved in the power generation market and the lifecycle of a power plant.

The diagram below highlights the different segments of the power market. Those segments are: (1) power generation, (2) power transmission, and (3) power distribution. Power generation is the process of generating electrical energy from various sources of primary energy. Transmission is the movement of this energy at high voltage over long distances from producers to distribution companies. Distribution companies then transport the energy over distribution networks and finally deliver the energy to homes and businesses.



Types of Power Generation

Electricity may be generated by renewable resources (such as wind, solar, hydroelectric, biomass, and geothermal resources) or from non-renewable resources (such as petroleum, natural gas, coal, and nuclear). Power plants that generate electricity from non-renewable fuels (other than nuclear power plants) are generally referred to as thermal power plants.

Renewable Sources	Non-renewable Sources

• Wind
• Solar
• Hydro
• Biomass
• Geothermal
	• Thermal (Carbon-Based)
	  ○ Oil/Petroleum
	  ○ Gas
	  ○ Coal
	• Nuclear

For the purposes of this handbook, many of the issues discussed will apply to power plants that generate electricity from both renewable and non-renewable resources. When possible, the handbook will note different considerations that may be required in relation to the fuel type. While nuclear power is also a potential source of power, due to its complexity and the degree of specialisation required, it has not been included within the scope of this handbook.

There are a number of information resources detailing differences in the technologies and types of technologies used in power generation. These differences are important. Each technology will have different implications for the structure of the PPA and the prices paid. Information about some of these technologies can be found in the list of additional resources at the end of this handbook.

Wholesale & Retail Markets

There is a distinction between the bulk power purchase market and the retail electricity purchase market. Power is purchased in bulk by offtakers (buyers) from the power producer at or near the point of generation. This power is then transmitted through transmission lines and distribution systems to retail consumers and other end-users. There may be a number of changes in the "ownership" of the power before it reaches retail consumers.

How much energy can a power plant produce?

Power generation plants are measured by the number of megawatts (**MW**) that they are capable of producing. A megawatt is a unit of measurement equal to 1,000,000 watts. A kilowatt (**kW**) is equal to 1,000 watts of energy.

How is power bought and sold?

A kilowatt hour (**kWh**) is equal to one thousand watts of electricity used continuously for one hour. Similarly, a megawatt hour (**MWh**) is equal to one million watts of electricity used continously for one hour. Capacity is purchased and sold in MW and in many cases is paid for regardless of whether the capacity is actually used. Energy is purchased and sold in MWh or kWh and is paid for only when consumed.

What does this all mean?

Here is a brief example: If a power generation plant is rated as having a capacity of 10 megawatts, it can be expected to generate up to 10 megawatts of power at any given time. If a 10 MW plant is operated at full capacity at a steady rate for 1 hour, it will produce 10,000 kWh of electricity. If the tariff is US$0.10 per kWh, the plant can generate power to the value of US$1,000 for every hour that it operates.

How does the power get from the power plant to the power customers?

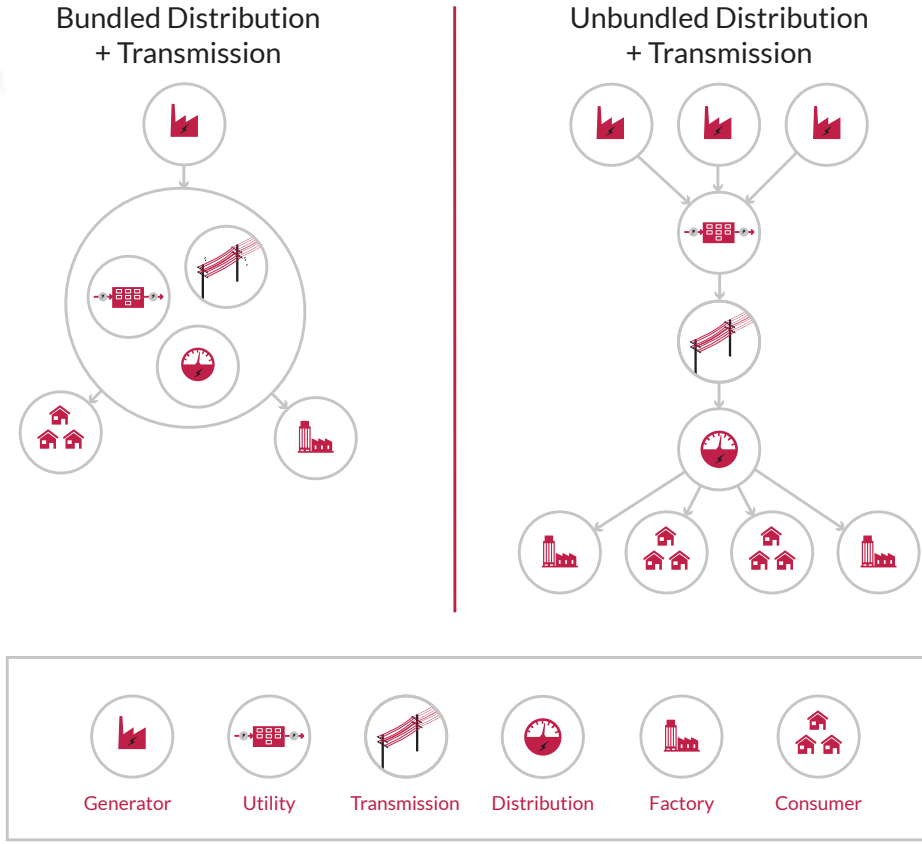
Responsibility for transmitting the power to, and interconnecting with, the power grid will vary from jurisdiction to jurisdiction and power plant to power plant. Who will be the responsible party often depends on whether the system within which the power plant will operate is a **bundled** system or **unbundled** system.

What's the difference between bundled vs unbundled electricity industry structures?

Depending on the legal and regulatory frameworks and the nature of the electricity market reforms taking place in a country, there are typically two different types of electricity industry structures: bundled and unbundled.

A bundled system comprises one in which the market roles of power purchasing, transmission and distribution are all "bundled" into one entity: the buyer. In a bundled system, the buyer usually bears responsibility for transmitting the power that is produced and sold by the seller. Similarly, the buyer in this system will have the obligation to connect the power plant with the power grid by a certain date so that power can be sold when ready.

An unbundled system is one in which one or more of these roles is not the responsibility of the buyer, and is handled by a different entity. The extent of this separation is dependent on the specific electricity reform path adopted in a particular jurisdiction.



Why is this all relevant? It matters because of the number of parties involved in each system. The more parties involved in the system, the more risk has to be appropriately allocated amongst the parties. This will impact on how the project is structured and where the risks may reside.

It should be noted that the electricity structure in different countries may not fit neatly into the above-mentioned categories. Depending on the reform path that has been adopted, there are usually different stages in the development of a power market, often starting with a single government offtaker, moving towards a greater role for independent power producers, investor-owned utilities and other private sector participants. Eventually,

a **spot market** should develop. In a spot market, the project company can sell power directly at the current market price, without a fixed contract.

In some jurisdictions, there may be hybrid market arrangements where producers with PPAs may still have the right or obligation to sell to the spot markets.

Roles of the Actors

Who are the various people, the **actors**, involved in the negotiation of a power purchase agreement, and what are their primary roles?

Primary Actors	Secondary Actors
• Offtaker (Buyer) • Power Producer (Seller)	• Government • Regulator • Customers / End User • Transmission Company • Distribution Company • Lenders • Construction Company • Plant Operator • Fuel Supplier • System Operator

The primary actors are usually an offtaker and a power producer. Depending on the legal and regulatory context, some of the secondary actors may also be signatories to the PPA.

Primary Actors

Power Producer (Seller)

The power producer or generator is the owner of the power project and the seller of power. This party is also sometimes referred to as the IPP (independent power producer) or project company.

Offtaker (Buyer)

The offtaker or power purchaser is the buyer of power. This will usually be a utility, which is often state-owned.

Secondary Actors

Government

The host country government is often involved in various phases of the negotiation of the PPA. The role of the government varies widely, based on each country's legal and regulatory framework.

The primary government actor involved is usually the ministry of energy which sets policy for the energy sector of the host country. Other government actors involved may include the ministry of finance, ministry of planning, investment promotion agencies, central bank, revenue authorities, ministry of environment or natural resources, ministry of land, ministry of archaeology, attorney general, and the legislature.

Regulator

Electricity sector regulators are usually required to approve any PPA before the offtaker can enter into the agreement. The regulator is responsible for setting or approving tariffs and ensuring that industry standards are complied with across the market. Regulation often involves a delicate balancing act of protecting consumer interest on the one hand, while also ensuring that IPPs are reasonably incentivised to develop power projects in a country.

Customers / End-Users

Small voltage customers/end-users are not directly involved in the negotiation of a PPA because they typically receive their power through the local distribution network. However, they are certainly affected by the PPA, as the costs of building and operating the power plant will (or should) ultimately be passed through to the end-users through the retail tariffs (or, in other words, the price) charged to the end-users.

High voltage customers may negotiate a PPA directly with the seller if they are taking power directly from the seller.

Transmission Companies

Transmission companies are responsible for moving the power generated by the seller at high voltage to the country's distribution networks. In a bundled framework, this will generally be the same entity as the offtaker.

In an unbundled framework, depending on the nature of unbundling, as discussed above, the transmission company may or may not be directly involved in the PPA negotiations.

Distribution Companies

Distribution companies are responsible for delivering the power to the end-user and collecting the tariff. Again, in a bundled framework, the offtaker may also be responsible for distribution. In an unbundled framework, distribution companies may also purchase power directly from the seller.

Lenders

Independent power producers are rarely able to finance 100% of the project costs alone. IPPs will usually borrow money from lenders to finance power projects. The lenders are often in the background of the negotiations. If the PPA is not acceptable to the lenders, it may have to be renegotiated before the lenders agree to make their loans.

There are several types of lenders. There are commercial banks that are lending primarily for commercial returns. DFIs lend for commercial and development impact. DFIs can be multi-lateral or bilateral (i.e., they can have several countries as their members or have just one country as their owner). Export credit agencies often provide financing for equipment.

Fuel Supplier

This is the company that supplies fuel to the power plant.

Construction Company (EPC Contractor)

The construction company is responsible for building the plant to the specifications that are defined in the PPA.

Plant Operator

The plant operator is responsible for ensuring that plant is operated and maintained in accordance with the obligations under the PPA.

System Operator

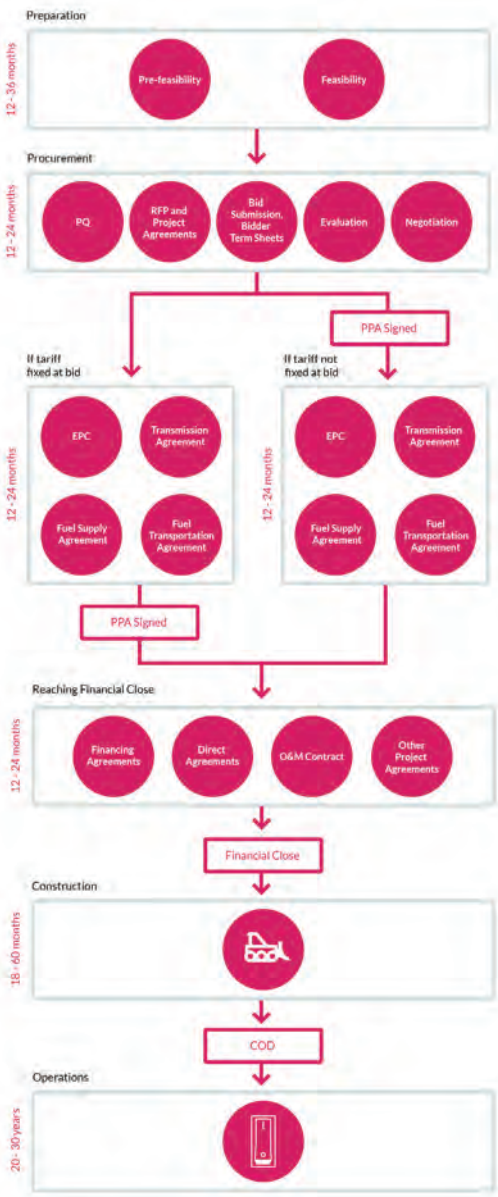
The system operator manages the operation of the electricity grid.

Lifecycle of a Power Generation Project

The following graphic provides an overview of a power generation project including the preparation, procurement/negotiation, construction, and implementation. The PPA is a critical part of the procurement phase of the project. Even though a PPA may take considerable time to negotiate, it will govern the project for the next 25-30 years and establishes the foundation for the financing, development, construction, operation and maintance of the project.

Power Generation Project Lifecycle diagram:

The timelines reflected in the diagram are merely illustrative and may overlap.


Preparation
12 - 36 months
Pre-feasibility
Feasibility
Procurement
12 - 24 months
PQ
RFP and Project Agreements
Bid Submission, Bidder Term Sheets
Evaluation
Negotiation
PPA Signed
If tariff fixed at bid
If tariff not fixed at bid
12 - 24 months
EPC
Transmission Agreement
Fuel Supply Agreement
Fuel Transportation Agreement
12 - 24 months
EPC
Transmission Agreement
Fuel Supply Agreement
Fuel Transportation Agreement
PPA Signed
Reaching Financial Close
12 - 24 months
Financing Agreements
Direct Agreements
O&M Contract
Other Project Agreements
Financial Close
Construction
18 - 60 months
COD
Operations
20 - 30 years

The Power Purchase Agreement (PPA)

What is a PPA?

The agreement that governs the sale and purchase of power is known as a **PPA** or power purchase agreement.

A PPA is a contract between two parties, one who produces or generates power for sale (the **seller/producer/project company**) and one who seeks to purchase power (the **buyer/offtaker**). This contract is sometimes referred to as an **offtake** agreement.

Origins of a PPA

A PPA is merely an instrument intended to facilitate the sale and purchase of electrical power. As such, it only comes into being once the prospective buyer (the **offtaker**) has made a series of important decisions. These decisions can include the need for power, the available sources of power, the buyer's economic ability to purchase power, the power generating technology desired, and the location of the power plant.

Power Demand

Before anything else, the offtaker will need to assure itself of the demand for power. A study will need to be undertaken to ascertain not only current power demand, but also any anticipated changes in demand over time.

Budget and Technology

After identifying the need for power, the offtaker must identify potential sources of power. This determination will depend on the approximate tar-

iff at which it can afford to purchase power, the fuel and technology to be used, and where the power generation facility should be located. The determination regarding the offtaker's budget will go hand-in-hand with the selection of power generating technology. Certain technologies are more expensive than others, but may be desirable due to their ability to supplement their power sources when demand is greatest, or because of their perceived environmental benefits. Government policy on the appropriate overall energy mix for the country may also affect the decision.

Location

Finally, the offtaker will also need to determine where the power source should be located. The location is typically determined on the basis of which regions of the country need additional power. If possible, the location will be near substations and transmission lines that can carry that power most efficiently to the end-user. Ultimately, offtakers (and producers) will want to locate the power source as close as possible to a connection point on the power grid to avoid the cost and risk of building transmission infrastructure and the transmission line losses. Other equally important issues that will determine location are: easy access to the fuel source to the plant, the potential social and environmental impact of any power plant on local communities, and whether efficient or low-cost mitigants are available. A gas-fired power plant, for example, would be of little use in a remote area where there is not an economically efficient source of gas. Certain renewable energy resources, such as solar or wind, may be more appropriate for remote locations and will have the added benefit of not adding to carbon emissions. These power sources, however, do not offer the same predictability of thermal power sources (both wind and solar are by nature more unpredicatble power sources). The choice of power generating technology is an important one for the offtaker. It will have a direct impact on the cost and reliability of power, as well as the environmental and social impacts of the project.

Power Procurement and Tariff Considerations

Armed with the knowledge gained from making these decisions, the offtaker will be able to reach out to market participants to seek solicitations of interest and price estimates. There are generally two ways in which this can be done.

The preferred method is via a solicited bid which takes the form of a competitive procurement process. This will often involve a formal request for proposals (**RfP**) which will identify, amongst other things, the amount of power being sought, the generation technology to be used, and the area where the power is needed. Using this information, producers will bid against each other to highlight their qualifications, their ability to pay for the upfront cost of building the power plant, and to offer the best tariff they can. The offtaker will compare prices, financial capacity and qualifications to ensure that the chosen proposal obtains a source of power that will function reliably over time at a price that is most advantageous to the end-user. This method is generally seen as producing a more competitive result than engaging in direct negotiations with interested producers who put forward unsolicited proposals.

Unsolicited proposals are sometimes utilised as a means of quickly procuring power to deal with emergency situations, and hastening power generation in countries with large power deficits. This process is also utilised in jurisdictions where there is no framework in place for competitive bidding. It is important to have adequate regulatory safeguard measures to ensure transparency and value for money in the consideration of unsolicited proposals.

Putting Pen to Paper

In competitive bidding, the draft PPA is sometimes included in the RfPs package to enable prospective bidders to ensure that project risk allocations are given due consideration in the submissions of their bids. In unsolicited proposals, by comparison, the offtaker has the option to provide a draft

PPA to the producer after satisfactory due diligence to ascertain the viability and feasibility of the proposal.

The first draft of the PPA can sometimes come from the producer. However, as the offtaker is seeking to purchase the power, and will be relying on the document for years to come, it is advisable for the offtaker to take responsibility for preparing the intial draft PPA **with the assistance of qualified legal counsel.** Many multilateral and bilateral development institutions have financing available to government entity offtakers to hire qualified legal counsel.

There are also instances where the prospective offtaker is a large industrial user of power, and in such instances it may be that the initial draft of the PPA comes from the producer for the offtaker's review as part of the process of evaluating the merits of the proposal.

It is worth noting that parties will sometimes elect to enter into a more preliminary, non-binding document called a memorandum of understanding (**MOU**) in order to document some of the more basic agreements that they have reached at that stage. As these documents are often lacking in important detail, and are ultimately superceded by the PPA, entering into a memorandum of understanding is by no means a necessary step.

Negotiation and Finalisation

The draft PPA will include the key items such as tariff, technology and location. It will also address a number of other issues that the parties will need to agree upon. Usually, once the initial draft PPA has been prepared, the producer and the offtaker sit down to negotiate the various provisions, and hopefully reach a stage where they both deem the document to be near final.

It bears noting that during the negotiation process it is advisable for both parties to engage knowledgeable legal counsel and, if funds are available, also engineers and financial consultants. The parties will benefit from the advice of these consultants in determining which risks and obligations are properly allocated to each party. This is an iterative process that will allow

each of the parties to better understand the transaction they are entering into, with the goal of arriving at an agreement that both parties can ultimately execute and abide by.

For projects being financed by third-party lenders, before a PPA can truly be deemed final, the lenders will need to be comfortable with the PPA. Although typically not a party to the PPA, the lenders financing the producer's upfront costs will want to assure themselves that the documentation governing the availability of revenue to repay its loan -- i.e., the PPA -- is satisfactory to them. The lenders will therefore seek to clarify or even modify provisions in the PPA to grant them greater comfort regarding the ability of their borrower (i.e., the producer) to rely on the PPA as a source of repayment of their loan. The lenders will seek to make clarifications or modifications to the PPA even if it has been signed. Such amendment could be contained in an addendum to the PPA, or contained in a document referred to as a "direct agreement." This direct agreeement will be entered into by the offtaker, the producer, and the lenders, and may include any amendments to the PPA required by the lenders, as well as certain provisions related to the offtaker's consent to the producer's collateral or conditional assignment of the PPA to the lenders in a default scenario, and the lenders' step-in rights.

Before the PPA is deemed ready for execution by any one of the parties, each of the parties will need to determine if the PPA needs to be approved by their senior management, a parliament or legislative body, a regulatory body, and/or another government entity. It is critical to the enforceability of the PPA and the stability of the long-term relationship it establishes that all such approvals and consents have been obtained.

Here is a summary of the key points discussed above:

Before the PPA:

- **Tariff, Technology and Location:** Before a PPA is drafted, an offtaker will need to decide what their budget is, which power-generating technology they want to use and where geographically the power is needed.

- **Technology**: The choice of power-generating technology is an important one for the offtaker and will have a direct impact on the cost and reliability of power.
- **Location**: Offtakers (and producers) will want to locate the power source as close as possible to a connection point on the power grid and to the end user to avoid transmission line losses and accessibility to fuel sources.

Power Procurement and Tariff Considerations:

- **Procurement Methods:** RfP - it is preferable for the offtaker to solicit bids from producers using competitive tenders which preserve transparency and ensure value for money is safeguarded. Unsolicited proposals are sometimes utilised as a means of quickly procuring power to deal with emergency situations and hasten power generation in countries with massive power deficits. However transparency and value for money must be safeguarded.
- **Quality Matters:** The offtaker should select a producer based not only on price, but also on quality and track record.

PPA Drafting:

- **Who takes the pen:** The initial draft of the PPA can come from either the producer or the offtaker, but is typically generated by the offtaker.
- **The importance of legal counsel:** The offtaker should seek the advice of qualified legal counsel when preparing the PPA.

Negotiation and Finalization:

- **Details:** The offtaker and producer will need to negotiate the PPA to ensure that both parties are aware of, and can agree to comply with, their obligations.
- **The elephant in the room -- Lender input:** For projects being financed with third party debt, before a PPA can be considered final it must be satisfactory to the lender. This is true even if the producer and offtaker have already signed the PPA.

Other Project Agreements

Whilst the PPA governs the sale and purchase of power, there are a number of related contracts that interplay and relate to the financing, building and operation of the power plant.

These agreements must be aligned with the PPA to ensure fair apportionment of risks. For example, the duration of the PPA should be synchronized to the life of the loan to ensure the loan is repaid before the PPA expires.

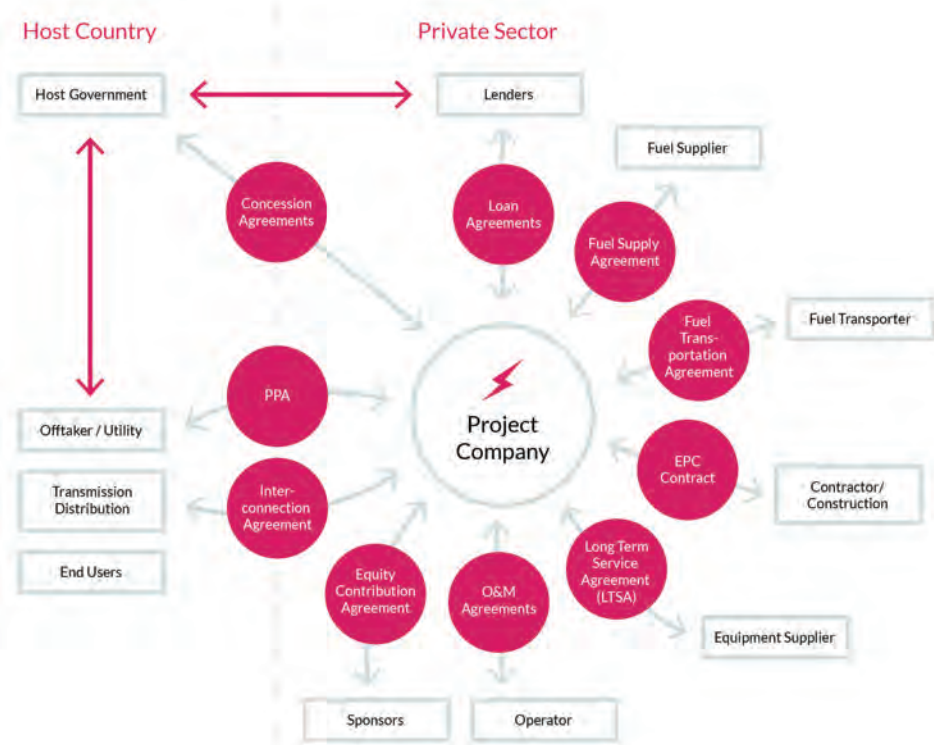
Additionally, each of the counterparties to the Engineering, Procurement and Construction Contract (**EPC Contract**) and the Operating and Maintenance Agreement (**O&M Agreement**) / Long-Term Service Agreement (**LTSA**) will need to be familiar with, and agree to abide by, the terms in the PPA relating to the design, construction, operation and maintenance of the power plant.

The following are some of the related project agreements typically necessary for a power project:

- **Concession/Implementation Agreement:** Grants the producer the right to develop, finance, construct and operate the power plant, including the right to sell power to the offtaker.
- **Grid Interconnection Agreement:** Governs the connection of the power plant with the power grid.
- **Fuel Supply Agreements/Bulk Supply Agreement:** Establishes the availability of fuel supply and quality.
- **Fuel Transportation Agreement:** Provides for transporting the fuel from the fuel supplier to the power plant.
- **Engineering, Procurement and Construction Agreement (EPC Agreement):** Sets the terms and conditions for the design of the power plant, the procurement of materials and equipment, and the construction of the power plant. The obligations created under this agreement can also be divided among multiple contracts that include one or more of these scopes.

- **Operating and Maintenance Agreement (O&M Agreement):** Governs the rights and responsibilities of the entity that will operate the plant and be responsible for its maintenance.
- **Long Term Service Agreement (LTSA):** Provides for servicing the plant at regular intervals during the operation of the PPA.
- **Loan Agreement:** Creates the obligation of the lender to make a loan to the producer to finance the power plant, as well as the obligations of the producer/borrower to comply with various covenants in the agreement.
- **Equity Contribution Agreement:** Obliges the owners of the power plant to make equity or subordinated debt contributions to finance the portion of the power plant not being financed by third party lenders.
- **Sovereign Support Agreement:** May include sovereign guarantees, comfort letters, put and call options, and other forms of sovereign support that enhance the creditworthiness of the offtaker and other government entities involved in the project.
- **Credit Support Agreement:** May include Partial Risk Guarantees (**PRGs**), letters of credit and bank guarantees from commercial banks, escrow agreements, and sponsor support.
- **Direct Agreement:** governs the relationship between the lenders and the parties involved in the project.

The following chart illustrates the relationships between the different types of agreements:



Overview of PPA Obligations

The main obligation of the buyer under the PPA is to pay the agreed tariff when due. The seller's primary responsibilities are to build, operate and maintain the power plant in accordance with the requirements of the PPA and applicable law, and deliver the agreed amount of power in accordance with the PPA. However, the parties' obligations do not stop there.

Additional obligations relate primarily to the need for: (i) payment and performance security; (ii) transmission of power and interconnection to

the grid; (iii) arrangements with lenders; (iv) consents, permits, approvals and licenses; (v) rights to the land on which the power plant and/or transmission lines will be located; and (vi) insurance.

For the most part, these obligations do not fall solely on one party alone, but are often shared by parties or will shift from one party to another based on the circumstances surrounding the power plant and where it is located.

	Buyer	**Seller**
Primary Obligations	Make payment	Build and operate power plant; deliver agreed energy
Security	Payment security	Performance security
Transmission/Interconnection	Transmission/Interconnection (bundled and some unbundled)	Transmission/Interconnection (some unbundled)
Arrangements with Lenders	Direct agreement	Financing
Permits	Assistance with permits/certain buyer approvals	Obtaining permits
Land	Grant of land/assistance with obtaining land	Obtaining land
Insurance	Force majeure, business interruption	Force majeure, currency, etc.
Local Content	N/A	Labour, materials, equipment
Decommission	N/A	Decommission, cleanup

Timing Requirements to Consider

There are usually various timing requirements in a PPA that both the producer and the offtaker need to keep in mind. Both parties need to make sure that they are comfortable with the timing requirements and the consequences if they fail to meet their deadlines for these requirements under the PPA. These include:

- Effective date of the PPA
- Time for satisfying conditions precedent and attaining financial close
- Time for testing the plant units for ascertaining COD
- Date for completing interconnection facilities and related facilities
- Time for fuel supply connection to the plant
- Fuel supply start date
- Time for submission and payment of invoices
- Time for conducting capacity tests
- Cure periods for various breaches
- Time to serve termination notices
- Dispute resolution timelines

There is also a need to ensure that the various timing elements are properly aligned. For instance, the interconnection date and the fuel supply start date need to occur before COD.

Financing of Power Projects

Bankability

Bankability refers to whether a project will be acceptable to lenders, and refers to the scope of consideration of a project seeking project financing in the commercial lending market. However, a project can also obtain financing from lenders other than commercial banks, including development finance institutions (**DFIs**) and private equity funds. Therefore, bankability can also be thought of as the ability to attract financing from any source of funds rather than limiting it to one particular source.

The Role of the PPA in Bankability

The PPA is key to bankability. For the typical power project, there is only one stream of revenue - payments from the buyer under the PPA. If the buyer fails to pay, it will be very difficult for the project to repay its lenders on a timely basis.

The PPA also helps to accommodate the unique nature of power projects. Power generation is unique in that the electricity generated is being sold into a geographically limited, and often highly regulated, market. As opposed to other high-value commodities like hydrocarbons, minerals or precious metals that can be transported to meet demand, the power project is beholden to the demand of the market that it serves. Similarly, the pricing of electricity to end-users in emerging markets is often guided by regulation rather than by market forces. The PPA is essential because it addresses both the uncertainty in demand and in pricing. On the demand side, the PPA establishes a long-term purchase obligation that provides a consistent revenue stream to the producer and a consistent flow of electricity to the offtaker. On the pricing side, the PPA incorporates a tariff formula that is tailored to the technology, operations and debt characteristics of the project, which can be modeled over the full life of the project. This allows the PPA to establish an electricity price that reflects the true cost of generating the power.

Risks to Bankability

In the typical power project financing, the only financial return to lenders is the repayment of the project debt and the payment of interest rates (along with certain agreed-upon fees). However, since debt providers have large capital outlays at risk, and depend exclusively on revenues from the project for repayment, the lenders will insist that the project sponsors and documents are strong enough for the project to reach commercial operations. The lenders, like all of the parties, want to avoid a catastrophic scenario where the project fails completely, especially during the construction phase of the project. At operations, the overarching concern is ensuring that revenues are adequate to service debt.

The following lists the key considerations which, if not sufficiently covered, will make a project unlikely to receive debt financing:

- **Term:** The term of the PPA should be long enough to allow the debt to be repaid, and if the debt is not fully amortised (in other words, if there will be principal amount outstanding at maturity) the term of the PPA should be long enough to support a refinancing of the remaining debt.
- **Tariff:** Lenders will require certainty with respect to the tariff payable under the PPA.
- **Changes in Law and Tax:** Lenders are not in a position to take any risk related to changes in law or taxes over the life of the project.
- **Offtaker Creditworthiness:** If the offtaker is not sufficiently creditworthy, lenders will require other broad forms of credit support that create additional costs and complications for the project. Even in developed markets, many offtakers are not sufficiently creditworthy to create a financeable project.
- **Sponsor Quality:** The lender and offtaker will consider the experience, reputation and financial strength of the owners of the special purpose vehicle.
- **Billing and Payment:** The billing period from the offtaker to the producer should be frequent enough (monthly or even bi-weekly) to minimize the level of unpaid energy and ensure that the schedule of debt service payments are adhered to. It also alerts the lenders to potential payment/liquidity issues.

- **Currency/Calculation:** PPA payments and calculations are most often made in the same currency as that needed to repay the debt. If not, there will need to be a plan for foreign exchange hedging and/or exchange rate indexation and a true-up mechanism. In addition, are there any convertibility issues with the payment currency? If so, the lenders may require payment to be made in a different currency, or the offtaker or the host government will need to guarantee conversion.
- **Termination:** Lenders do not want the offtaker to be able to escape the long-term purchase obligation under the PPA, since this would leave the project without any revenue to service the project debt. Lenders will pay particular attention to ensure that seller events of default and force majeure events do not allow the offtaker to prematurely terminate the project. If termination does occur, lenders will also want assurances that the project debt will be satisfied.
- **Remedies upon Buyer Events of Default:** In particular, lenders need the seller to have the ability to exercise certain rights, even up to PPA termination, if the offtaker is failing to make payments or fails to deliver the required payment security.
- **Lenders Rights:** Lenders will typically make provision for step-in rights and taking a security interest over project assets via the loan and direct agreements.

While the above can provide some useful guidelines, ultimately, bankability is an ever-changing concept. What the lending market accepts (or demands) today may be different from what it will accept (or demand) tomorrow. Given the technology, size, scope, volume and geographical location of power projects, it can be very difficult to ascertain what is truly "market" (i.e., consistent with terms you generally see market participants accepting). Moreover, an experienced developer or sponsor may be better able to persuade lenders to accept provisions that are more friendly to the project company. Alternatively, lenders may be happy to live with a particular provision or risk at the project level, as long as they have a guarantee or other form of credit support (from either the sponsor or offtaker) to cover that risk.

Finally, it is worth noting that some power markets, particularly in developed countries, are sufficiently mature that PPAs are not even required to make a project bankable. This is often the case with merchant power plants (those that do not benefit from a dedicated buyer) where a project can be developed on the basis of independent reports indicating the existence of sufficient expected spot market demand. Once the project is completed, the plant will simply sell into the spot market. However, even in the most developed markets, the absence of a long-term PPA can result in higher interest rates for the project. A conventionally bankable PPA remains an essential tool in virtually every market and ideal in developing country energy markets.

Why Care About Bankability?

Questions arise in the minds of policymakers: Why do these power projects need debt? Can't these projects be financed on the balance sheets of large corporate sponsors? Even better, can the government just build these projects instead? It is hard enough to design and build a project - and to negotiate a PPA - without lenders involved. Why worry about making lenders happy? Why be concerned about bankability?

Taking a step back, the goal for any power project is to produce reliable power at the lowest possible cost. Debt can be expensive, especially project finance debt. However, other sources of financing can be even more expensive, or prohibitive for other reasons.

First, governments could certainly build power projects themselves - but they rarely do. Power projects are large and expensive, tying up massive volumes of capital that could otherwise be used for a wide array of purposes.

Countries can certainly obtain financing from DFIs, but governments need to carefully allocate available funds from each institution, and utilising funds from these institutions does not avoid the need to address lender concerns.

Projects can be financed on the balance sheet of large corporate developers, but governments are often surprised that this does not result in cost sav-ings for the project. Why not? Surely large, creditworthy corporate devel-opers can borrow funds in the capital markets at relatively low interest rates (much lower than the cost of project finance debt), and pass these sav-ings on to the project? The an swer is yes, certain developers do have access to low-cost capital market funding, but their managers (and their treasury department) still consider all available in ternal funds to be equity when making investment decisions. Companies seek a high internal rate of re-turn for their equity. The following diagram provides a simplified view of two typical options:

As shown above, in general, the less equity that is involved in a project, the lower the likely cost of the overall financing. As a practical matter, this may vary depending on how much credit support is required in connection with the project financing (since each element of credit support will impose additional costs). It will also vary based on the rates of return demanded by the equity and the interest rate for the debt.

Even where large corporate developers potentially have access to low-cost capital funding, they may still prefer to develop this type of project using "off-balance sheet" financing to ensure that the loan facility does not does feature on the balance sheet. It may also be more attractive to lenders to lend to SPVs, as such companies are "clean" and have no other preferred creditors.

Put more simply, bankability matters because the project finance approach often provides the lowest-cost financing for a power project, taking all variables into account.

Overview of Project Finance vs. Corporate Finance

Project finance refers to the financing of a project based on (1) the projected cash flows of the project and (2) the value of the asset. A project's financing is typically non-recourse - the lenders have recourse to the assets of the project itself, but they have no recourse to the owners of the project. The lenders are repaid by project cash flows or, in a worst-case scenario, by foreclosing on the project and acquiring the project assets.

In a typical project financing, a special-purpose entity is created to own the assets of the project and enter into the financing documents and the project documents, including the PPA. The project finance lenders will take a security interest in all of the assets of the project, including the PPA and other major project documents. The lenders will also have a security interest in the project accounts, and all of the amounts on deposit in, or credited

to, those accounts. Lenders may impose strict requirements on the location of all project accounts, and in the flow of funds through these accounts. In particular, the cash flow is restricted such that the project company cannot pay dividends or distributions subject to various conditions - often, no distributions will be made to the sponsors for a number of years. In practice, many power projects are financed on a limited-recourse basis. Lenders will require various forms of credit support, including sponsor guarantees to cover certain risks. Since the lenders do have recourse, under specified circumstances, to the sponsors and other related-party guarantors, these are not "pure" non-recourse financings.

Due to the lenders' security interests and the heavy involvement of lenders in the decisions of the project, including with respect to cash flows and capital investment decisions, project finance requires a complex set of highly-tailored agreements. This can impose high transaction costs, including lawyer's fees for the creation and negotiation of these agreements.

Corporate finance, by contrast, is based on the balance sheet of the entity receiving the financing. Lenders have recourse to all assets of the entity, but they do not have a security interest in any assets. There are typically no (or very few) restrictions on cash flow. Documentation is relatively light.

Raising funds through corporate finance may be cheaper than through project finance. However, corporate finance is only available to fairly creditworthy borrowers, and where the financing providers are confident in a relatively deep secondary market. Capital markets are unlikely to take construction risk, in particular. As discussed above, certain developers do have access to low-cost capital market funding, but it is not realistic to expect that this low-cost financing will be passed on to the project, as developers will require a higher internal rate of return for what they regard as their equity.

Direct Agreements

A direct agreement sets out the offtaker's acknowledgement of the security interests granted by the project company to the lenders with respect to the project company's rights and interests under the PPA, and the lenders' rights to take remedial action (including taking over the project) in a default situation. These rights are referred to as **step-in rights**. The direct agreement will be entered into by the offtaker, the project company, and the lenders, and establishes a direct contractual relationship between the lenders and the offtaker.

Whilst the primary obligation to obtain financing falls on the project company, the offtaker is generally expected to agree to amend or clarify the PPA as reasonably requested by the project company's lenders. Ideally, such amendments and clarifications are introduced prior to the signature of the PPA by the project company and the offtaker. However, even if the PPA has been signed, the offtaker could still be expected to agree to certain amendments and clarifications to the PPA. The lenders may refuse to lend if this is not done. Where the PPA has already been signed, such modifications will either be incorporated by way of an amendment to the PPA, or through the direct agreement.

Environmental & Social Requirements

Power plants are necessary for power - and we need power! They can also be large, loud and messy. Impacts on the community can occur both during construction (large equipment, increased road traffic, etc.) and operation (noise, air and water pollution). Local law will generally include a number of environmental and social requirements that must be complied with. Additionally, many lenders will expect compliance with their own environmental and social requirements as part of the financing of the project. Many developmental finance institutions require compliance with the IFC Environmental and Social Performance Standards (see http://goo.gl/pNaCOv), while others such as the African Development Bank have their own standards (Integrated Safeguard System; see http://goo.gl/hWTO5p). In addition, a number of commercial banks require compliance with the Equator Principles (http://www.equator-principles.com/). For ease of reference these standards will simply be referred to as **lender standards** in this section.

Environmental considerations

Different types of power plants create different environmental concerns. For example, coal-fired power plants have to address emission levels of sulfur dioxide, nitrogen oxide and dust particles, as well as potential contamination of water sources. Similarly, construction of large hydroelectric plants may involve large-scale resettlement of populations, destruction of forests, degradation of water quality and diversion of water sources which impact on the environment and affect the ecological system. No technology is completely free of environmental impacts.

Failure to adequately address environmental risks associated with a project's technology may result in sanctions by local authorities. Environmental considerations may also affect the ability to access financing.

Social considerations

In addition to environmental concerns, local law and lender standards will have requirements pertaining to social considerations. These include provisions relating to gender issues, worker rights, limiting the impact of a power plant on the local community, and issues pertaining to resettlement.

Worker Rights

Local law and the above-mentioned lender standards will all contain requirements pertaining to worker rights. These will relate to the permitted treatment of workers, the minimum age of workers allowed to be employed in connection with the project, and the payment of workers, among other things.

Community Outreach/Impact

While not a party to the PPA, the local community is clearly at risk of being impacted by a power plant located in its locale. As a result, the lender standards all include various structures regarding the permissible impacts to, and treatment of, the local community. When determining the need for a PPA, the parties should be mindful of any potential impacts on the local community and should consider engaging them through community outreach.

Resettlement

In order to build and transmit the power from certain power plants, it may be necessary or desirable to have people living in the vicinity agree to relocate or resettle. Resettlement generally refers to being physically displaced or moved from your residence, as well as being economically displaced (losing income, assets or access to your source of livelihood). To the extent any such resettlement is deemed involuntary, this will be an issue of particular concern for the lenders and may prevent certain lenders from providing financing. Involuntary resettlement typically refers to a situation in which the impacted people do not have the right to refuse the resettlement.

Gender Issues

The transformational nature of improved access to power can have a significant impact on gender outcomes in the community which the power project serves. In order to ensure that these benefits are fully realized, it may be beneficial to adopt gender-specific strategies as part of any local community development plan associated with an energy project. This may include targeted use of electricity to modernise cooking stoves in the home or strategies to capture indirect benefits, such as extending water supply lines to the power plant to also serve nearby communities.

Summary of Key Points

Overview of Power Sector

- **Power generation**: The process of generating electrical energy from various sources of primary energy. Transmission of this generated energy is done at high voltage to move the energy over long distances closer to where the end user will use the power. Distribution is the division of the energy into usable voltages so that consumers can purchase the energy.
- **Types of electricity industry structure**: Two different types of electricity industry structures: bundled and unbundled. In a bundled, market, the utility controls both transmission and distribution. In an unbundled market, the utility is segregated from the transmission and distribution of the power.
- **Role of Actors**: The power producer is the seller of power and owner of the power project. The offtaker, or power purchaser, is the buyer of power.

The Power Purchase Agreement

- **The Foundation**: The power purchase agreement (**PPA**) is the central contract that governs the sale and purchase of power.
- **Planning and advice**: The offtaker and producer will need to negotiate the PPA to ensure that both parties are aware of, and can agree to comply with, their obligations. Due to the complexity of the PPA, signficant pre-planning and advice of outside counsel is often required.
- **Tenders**: It is preferable for the offtaker to solicit bids from producers using a competitive tender. In countries with massive power deficits, unsolicited proposals are sometimes permitted as a means of quickly increasing power generation capacity.

Financing

- **High Capital Costs**: Power projects are large and expensive, tying up massive volumes of capital. A well drafted and balanced PPA is necessary to attract this level of financing.
- **Bankability**: In order to improve the bankability (i.e., ability to attract financing) of a project, the host government may need to provide guarantees and other credit enhancements.
- **Payment Security**: the parties often put in place mechanisms to prevent interruptions in the stream of payments under the PPA.

Environmental and Social Requirements

- **Local law**: Local law will generally include environmental and social requirements.
- **Lender Requirements**: Many lenders will expect compliance with their own environmental and social requirements (e.g., International Finance Corporation Environmental and Social Performance Standards, Equator Principles, African Development Bank's Integrated Safeguard System).
- **Environmental Requirements**: Different types of power plants create different environmental concerns - no technology is completely free of environmental impacts.
- **Social Requirements**: Local law and lenders generally have requirements regarding worker rights, community outreach, and resettlement.

Financial Provisions

Introduction

Tariff Structures

Procurement of Electricity

Invoicing & Payments

Credit Support for Offtaker Obligations

Credit Support for the Project Company's Obligations

Tax Exemptions

Summary of Key Points

Introduction

The financial terms of the PPA are arguably the most important provisions in the PPA - at its essence, the PPA is an agreement to purchase. The question is, what exactly is being purchased, and at what price?

These terms are based on the tariff (*Tariff Structures*), which is typically a complex formula to determine the price of capacity and energy. The tariff is established through some form of the procurement process (*Procurement of Electricity*), whether through a competitive tender or through a form of price discovery. The devil is in the details of invoicing and payment (*Invoicing & Payment*). Given the nature of the power markets and power projects, there are often credit and liquidity concerns on both sides of the PPA, resulting in various requirements for credit support for the offtaker's obligations (*Credit Support for Offtaker Obligations*) and credit support for the project company's obligations (*Credit Support for the Project Company's Oblligations*). Another key issue is whether tax exemptions are granted to the project (*Tax Exemptions*).

All of these provisions are heavily negotiated, creating particular complexity in the PPA.

Tariff Structures

The tariff is one of the most important aspects of any PPA. When used in this chapter, the term **tariff** is understood to include a few components. First, it encompasses the actual price that the offtaker pays to the project company for capacity made available and/or energy generated. The tariff also includes the broader set of terms and conditions that surround the price. These other terms determine the amount of money the offtaker will pay to the project company each month. This section will explain:

1. The types of tariff structures (capacity-based vs. non-capacity-based) that are commonly found in power purchase agreements;
2. The methods that can be used to establish the price per unit of capacity that is made available and/or per unit of energy that is generated;
3. How **take-or-pay** obligations under fuel contracts impact and should be reflected in the tariff that is payable under the power purchase agreement; and
4. How the length of the term of a power purchase agreement impact the tariff.

Different tariff structures are used for dispatchable and non-dispatchable technologies.

Dispatchable technologies refers to those technologies that can be dispatched by the offtaker. This means that the offtaker can (and indeed must) deliver instructions to the project company that directs it to generate a specific quantity of energy (or power) during each settlement period. Examples of dispatchable technologies include all types of thermal generation facilities such as gas turbines (whether single or combined cycle), reciprocating engines that are fueled by diesel or heavy fuel oil, and coal-fired generation facilities, plus hydroelectric facilities other than most run-of-river facilities.

Non-dispatchable technologies refer to those technologies that cannot be dispatched by the offtaker, but are instead fed into the network as and when the energy is available. In general, all renewable technologies other than large (dam-based) hydroelectric are non-dispatchable. Examples of non-dispatchable technologies include wind and solar. The energy must be generated using the renewable resource when and to the extent that resource is available or (in the absence of any limited storage capacity associated with concentrated solar power (**CSP**) projects the energy will be lost.

As a result of this defining characteristic, very different tariff structures are used for dispatchable and non-dispatchable technologies. The two sections below describe the two different types of tariff structures that are commonly used in connection with dispatchable and non-dispatchable technologies.

Tariff Structures for Dispatchable Technologies

Tariff structures have evolved over the years in different jurisdictions toward greater efficiency in allocating energy resources and refining payment mechanisms to incentivise investment. The first tariffs combined the energy and capacity elements into a single energy charge (usually stated in Dollars per kWh). The next generation of tariffs added a **take-or-pay** requirement to essentially guarantee a floor to the level of expected dispatch. The third generation of tariffs eliminated **take-or-pay** concepts from electricity tariffs (except to the extent required to reflect any take-or-pay obligations under the fuel supply agreement that must be passed through) and introduced capacity and energy payments to better protect producers against demand volatility and consumers against the need to pay for energy that is not needed (and is therefore not generated).

Capacity-based tariffs were developed to address the drawbacks that are inherent in the energy-only and take-or-pay structures. These tariffs are structured to balance the interests of investors and consumers in an economically efficient manner. This is achieved by ensuring that the project company has a reasonable opportunity to earn revenues that are sufficient to (i) repay the capital invested in the project plus a reasonable return to the project investors and (ii) cover the fixed operating costs of the project, regardless of whether the offtaker dispatches the generation facility or not. The offtaker's interests are protected because the offtaker is only obligated to pay for the capacity that is made available to it, plus the energy that is dispatched by the offtaker and actually delivered to the delivery point.

In general, these tariffs provide that the offtaker will pay to the project company each month:

- A charge (a **Capacity Charge**) for the capacity of a generation facility that is made available to the offtaker, regardless of whether the offtaker actually dispatches the facility, and
- A per MWh (or per kWh) charge (the **Energy Charge**) for energy that is dispatched by, and delivered to, the offtaker.

The **Capacity Charge** is sized to enable the project company to earn revenues under the power purchase agreement that are sufficient to enable the project company to:

1. Repay the project loans (and in some cases associated infrastructure such as transmission lines);
2. Pay the sponsors a return on the equity and quasi-equity (such as shareholder loans) invested by them (and, in the case of a project company that is structured on a Build-Operate-Transfer basis, return the equity and quasi-equity invested by the sponsors to the sponsors over the term of the PPA);
3. Pay all corporate and other taxes that are assessed on the project company and its properties; and
4. Pay for fixed operations and maintenance costs and any other agreed-upon project costs that will be incurred by the project company regardless of the dispatch factor.

The **Energy Charge** is sized to enable the project company to earn sufficient revenues under the PPA to allow the project company to:

1. Recover the cost of any fuel used to generate the energy dispatched by, and delivered to, the offtaker; and
2. Pay for any operation and maintenance costs that vary depending on the quantity of energy produced by the generation facility.

As a result of this tariff structure, the project company is indifferent to actual dispatch levels because the project company's capital and fixed operations and maintenance costs are recovered through the Capacity Charge, which is payable regardless of the level of dispatch. As a result, it is not necessary for the project company to charge a risk premium to bear market risk. At the same time, this tariff structure reflects the true nature of project company costs and is consistent with the principles of economic dispatch.

The Capacity Charge is stated as a price (sometimes referred to as an **Hourly Base Capacity Price**) for each MW that is made available (whether or not that MW of capacity is actually used to generate energy) over a settlement period. Each settlement period is weighted to reflect the importance of the availability of capacity during that hour to the offtaker. The charge paid for each hour can be stated as:

$$HCP_i = (BCP_i + FOMC_i) \times PWF_i \times AvCap_i$$

where:

HCP_i – means the amount of the Hourly Capacity Payment for hour 'i';

BPC_i – means the amount of the Base Capacity Price for hour 'i';

$FOMC_i$ – means the amount of the Hourly Fixed Operations & Maintenance Charge for hour 'i';

PWF_i – means the period weighting factor for hour 'i', (which is a number within a range of, for example, 0.65 and 1.5, that reflects the importance of the capacity during that settlement period); and

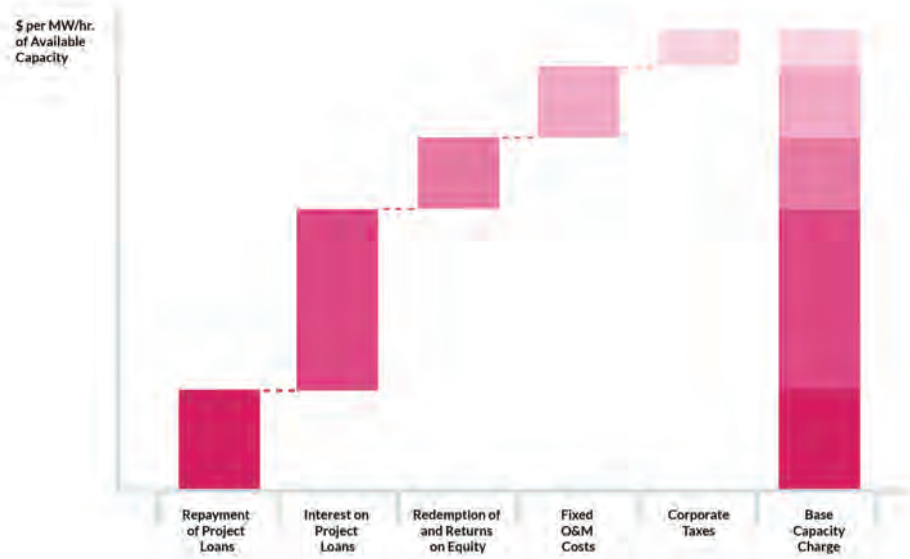
$AvCap_i$ – means the capacity that is declared to be available during hour 'i' by the project company.

The Hourly Capacity Payments that are payable during each hour of a month (month '**m**') are then summed to determine the monthly Capacity Payment. In this manner, the offtaker only pays for capacity that is actually made available to it. Although the tariff will contain many formulas and will address many matters that are not addressed above (e.g., ancilliary charges, start-up costs and other supplementary items), this formula, which captures the most important elements, provides an example of how the key concepts on which a modern capacity-based tariff can be stated.
It is however, useful to note that other provisions of the Power Purchase Agreement will adjust $AvCap_i$ downwards in the event that the project company declares that more capacity is available than the project company can actually deliver during hour 'i'.

It is also useful to note that in the event that the project company is not able to make capacity available due to risks that the offtaker has agreed to bear, then the capacity will be deemed to be available to the offtaker. Examples of such risks include risks related to the availability of the transmission system to take energy from the power plant, the availability of fuel (if the offtaker is responsible for providing fuel), and political force majeure events.

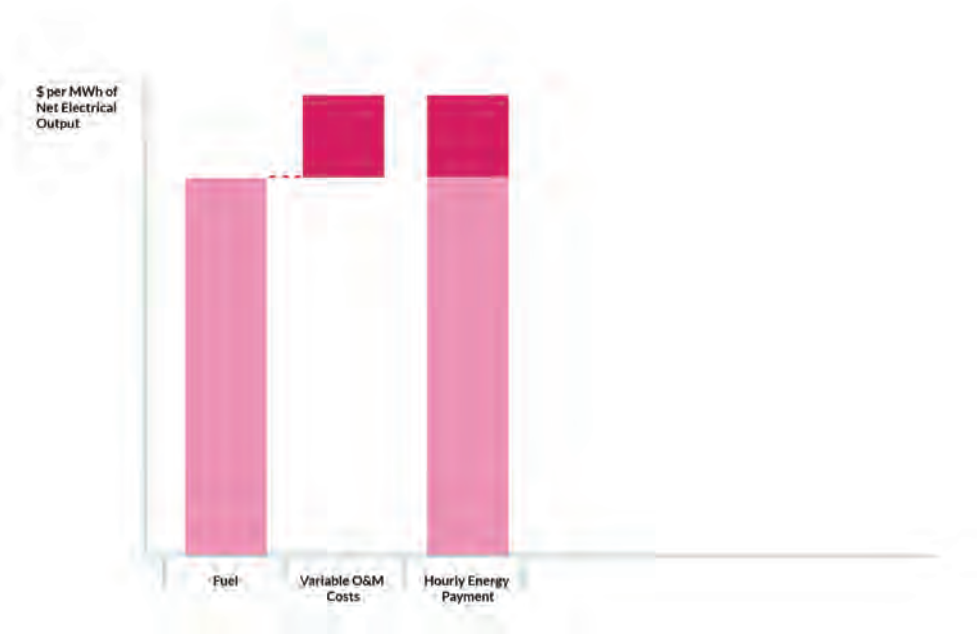
The illustration below shows the principal components that make up a Base Capacity Charge and shows (in general terms) the relative size of each such component at the beginning of the term of a PPA. During later years of the term, the interest on project loans component will decrease. This decrease is offset by increases to the repayment of project loans and redemption of and return on equity components.

Key Components of a Base Capacity Charge



The illustration below shows the principal components that make up the Energy Charge under a capacity-based tariff for a thermal power plant. (The Energy Charge under an energy-only tariff on a renewable project will contain components that are similar to those identified in the image above showing the components that go into a Base Capacity Charge.)

Key Components of the Energy Charge



Key Points

- Capacity payments allow for project companies to recover their fixed costs (capital costs and fixed operating costs) and agreed-upon profits. These charges are paid so long as the power plant is made available for dispatch.
- Energy payments account for fuel and variable operating costs.
- In some jurisdictions, supplemental charges are imposed on the buyers for grid system requirements (such as start-up charges, cost of ancillary services, and any charges for force majeure events that are the offtaker's responsibility under the PPA).

Tariff Structures for Non-Dispatchable Technologies

Typically, PPAs for non-dispatchable technologies (primarily renewables) require that the project company deliver and sell to the offtaker all of the energy generated by the generation facility. The price is stated in simple terms such as cents (or other currency unit) per kWh or Dollars (or other currency unit) per MWh generated and delivered. The currency unit used is usually determined by the currency of the EPC contract or the currency in which the loans are denominated.

These tariffs also recognize that there will be times when either the offtaker or the transmission system operator may **curtail** the production of energy at the facility due to constraints on the grid, emergencies, or for other reasons. Different markets allocate the financial risk for curtailment losses differently. In emerging market PPAs, the offtaker will cover curtailment losses as part of the tariff. Often, this is limited to curtailment losses that go over a pre-determined threshold. The curtailed energy is sometimes referred to as **deemed generation**.

The main reasons that require the offtaker of a non-dispatchable plant to pay for deemed generation are:

- The likelihood of a prolonged curtailment is more significant for various reasons, including the condition of the transmission system and the likelihood that an insufficiency of generation capacity will trigger a network-wide blackout; and
- The government of the host country may have a controlling interest in both the offtaker and the transmission system operator. In this case, investors will be concerned that the offtaker may cause the transmission system operator to curtail generation in the event that the offtaker may purchase energy at a lower price from other sources.

The risk of prolonged curtailments has led to the development of more robust methods for calculating deemed generation quantities in emerging markets. This is a logical response to the risk of prolonged curtailments,

because, during a prolonged curtailment, the total amount of deemed generation payments can be very large, and they will depend heavily on the deemed generation formula and the measuring equipment.

As an example, a PPA for a wind project would typically require the project company to construct one or more meteorological masts to measure the average speed and direction of the wind during each period of six minutes occurring during a billing period. Prior to the commercial operations date, the offtaker and the project company would develop (with the approval of the independent engineer) a *power curve* that predicts, for each wind speed and direction, the net electrical output the wind farm can generate under those conditions. The power curve would be updated annually or semi-annually based on the actual performance of the wind farm. When a curtailment occurs, the power curve could then be used - together with data on the wind speed, wind direction, and the availability of each wind turbine generator during the duration of the curtailment - to calculate the quantity of deemed generation for which the offtaker will be required to pay. Similarly, a PPA for a solar project would require the offtaker and the project company to develop a power curve that is based on the solar insolation measured by one or more pyranometers or pyrheliometers (which measure the direct and indirect irradiance and the direct radiance striking a plane, respectively). In recent years Cape Verde, South Africa and Kenya have each signed PPAs, some of which feature the above provisions for wind generating assets. Some of of these units have entered commercial operations.

Key Points

- Energy-only tariffs are stated in $/kwh or $/MWh (but they may also be stated in a local currency).
- The principle of deemed energy applies, since all energy produced is billed at the metering point and is payable.
- Careful measurements are taken by buyer and seller to determine/verify the level of deemed energy for which the offtaker is obligated to pay.

Feed-in Tariffs

Feed-in tariffs are commonly used to incentivise the production of energy from renewable resources.

A feed-in tariff is generally understood to provide certainty as to three key terms for a producer. Those three terms are (a) guaranteed access to the grid, (b) long-term PPAs, and (c) an energy price that is effectively subsidised.

The energy price is usually established by the sector regulator through an evaluation of (i) the capital costs and operations and maintenance costs that a reasonably efficient producer would incur in connection with the development, construction, operation and maintenance of a power plant that is based on a particular technology (such as wind or solar), and (ii) the capital structure that a producer should be able to achieve.

Feed-in tariffs are generally established and remain valid for a defined term so that the producer is certain that it will be able to recover, and earn a reasonable return on, its investment in the project. As a general rule, all producers (subject to a pre-determined cap on the quantity of capacity that is eligible under the feed-in tariff) that achieve commercial operations or start construction by a pre-determined date are eligible for the feed-in tariff for the term of their contract.

Regulators periodically revise the feed-in tariffs that are applicable to new projects, with the objective of reducing the feed-in tariff to capture lower capital costs and other costs savings that have resulted from the more widespread adoption of that particular technology. Photovoltaic solar projects provide the best example of the trend towards lower costs; since 2008 the price of photovoltaic panels has dropped steadily and dramatically.

Feed-in tariffs are generally structured in a manner that is consistent with the tariffs described above in the section titled Tariff Structures for Non-Dispatchable Technologies. A number of African countries operate feed-in tariffs for renewables.

Take-or-Pay Obligations Under Fuel Contracts - Implications for Electricity Tariffs

In a number of emerging markets, gas suppliers usually insist that long-term gas supply agreements contain a take-or-pay clause. In the context of a project company, a take-or-pay clause provides that the project company must purchase an agreed quantity of gas (usually stated in MMBtus or GJ (LHV) each year or pay for that quantity of gas regardless of whether project company purchases that quantity.

The economic rationale for a take-or-pay clause in a gas supply agreement is two-fold. First, the gas supplier will have the right to extract gas from the reservoir(s) from which it is supplying gas for a defined and limited period of time that is set out in its exploration and development licence over the blocks that include the relevant reservoir(s). If the gas supplier were to sign a long-term gas supply agreement with a project company, and the project company were to fail to purchase a significant proportion of the reserves the gas supplier dedicated to the project company, then the gas supplier would lose some of the economic value represented by its investment in exploration, field capital costs, gas processing facilities, and other infrastructure. Second, in order to service its own debts, the gas supplier needs a consistent revenue stream. The take-or-pay obligation is the mechanism that gas suppliers use to control these risks.

In spite of the economic rationale behind them, take-or-pay obligations should be treated with care, because they can impact the tariff that is payable under a power purchase agreement. Every take-or-pay obligation should soften the potential consequences for the purchaser of the gas (in this case, the project company) by including carry-forward and make-whole provisions. A make-whole provision provides that if the gas purchaser fails to purchase the take-or-pay quantity during any take-or-pay period (which is almost always a period of one year), and pays a take-or-pay payment equal to the purchase price multiplied by difference between (i) the take-or-pay quantity, and (ii) the quantity of gas consumed, then the

take-or-pay payment can be credited towards the cost of gas in a subsequent take-or-pay period, once the take-or-pay quantity has been consumed during that period. A carry-forward provision does just the opposite. It provides that if the gas purchaser purchases a quantity of gas in excess of the take-or-pay quantity during a particular take-or-pay period, then the carry-forward quantity (the quantity of gas purchased in excess of the take-or-pay quantity) will be used to reduce the take-or-pay quantity in subsequent take-or-pay periods.

Take-or-pay obligations impact the tariff that is payable under a PPA in the following manner. In the event that the offtaker fails to dispatch the project company at a level that would enable the project company to consume a quantity of gas equal to the take-or-pay quantity during a take-or-pay period, then at the end of that take-or-pay period, the offtaker will be required to make a payment that enables the project company to pay the take-or-pay payment to the gas supplier.

Key Highlights

- Take-or-pay provisions are necessary in long-term fuel supply contracts because they lower risk for parties who bring fuel and generation assets to the market.
- Take-or-pay provisions may have the effect of increasing tariffs during certain months that coincide with the end of a take-or-pay period, thereby squeezing the liquidity of an offtaker who makes take-or-pay payments for energy not used.

Tariffs and Bankability

Regardless of the tariff structure chosen for the PPA, the methodology for calculation of the tariff must be clear and fixed for the term of the power purchase agreement. Any change to the tariff must be made in accordance with adjustment mechanisms that are agreed up front in a binding agreement and signed off as part of the seller's and lenders' due diligence process. Tariffs that are subject to a general or discretionary right of regulatory or political adjustment are generally not acceptable to lenders and investors outside North America and Western Europe, which have a long tradition of rate base regulation. Even in those jurisdictions, utility investors are starting to demand more regulatory certainty before they undertake sizeable investments, such as in new generation capacity.

Procurement of Electricity

The price component of a tariff is usually established either by conducting an international competitive tender or by using an **open book methodology** (which is sometimes referred to as **price discovery**). These two methods are explained in the following sections.

International Competitive Tenders

In most jurisdictions, procurement laws require governments and government-owned or controlled entities to procure goods and services through competitive tenders, subject to certain exceptions. The public policy rationale for these laws is sound - a properly conducted international competitive tender is a very effective tool for using competitition to achieve a reduction of the price of capacity and energy, and for increasing transparency in the power market. Unfortunately, the procurement of a long-term power purchase agreement is often a lengthy and expensive process. In addition, some procurement processes are so complex or technical that a rigid, formulaic approach to the tendering process might not provide the best outcome for the host country. In some cases, the lack of flexibility to accommodate the peculiarities of a complex project can preclude a project from going forward at all, even in the presence of significant competition, and even if the project would provide good value for money to the country.

Large scale, project-financed power projects are a prime example. All parties involved in these projects can benefit from a degree of flexibility to conduct pre-bid discussions with pre-qualified bidders and post-bid negotiations on (a) the exceptions taken by the preferred bidder in the proposal they submit in response to the Request For Proposal (**RfP**) issued by the offtaker, and (b) comments that may be received by the lenders following the execution of the power purchase agreement.

In general terms, an economic tariff is best achieved by ensuring that a sufficient number of pre-qualified bidders submit a proposal so that competi-

tive pressures result in an economic tariff. The number of pre-qualified bidders can in turn be maintained by:

1. Including reasonable, financeable terms and conditions in the RfP and the draft project agreements that will be attached to it, including reasonable and balanced terms regarding (a) the amount of the bid security, (b) the events that will give the offtaker the right to draw on the bid security, (c) the bid validity period, and (d) period for the negotiations as to the form of the project agreements (including the PPA);
2. Especially in the case of hydroelectric projects and other projects where the design will be heavily impacted by the site and the tariff, establishing a sound technical basis for the project design by conducting a feasibility study that will allow for a reliable forecast of the length of the construction period and the projected capital cost of the project.

A successful tender requires, among other things, (a) a clear and concise RfP that attaches either fully-termed drafts of the project agreements (including the PPA), or, at the very least, clear and concise term-sheets for the project agreements, and (b) a consultative tender process that facilitates an open dialogue between the pre-qualified bidders and the offtaker.

Competitive Tenders for Fixed Tariffs

Under a fixed-price tariff structure, the terms of the RfP require the bidders to bid a fixed price for capacity that may be subject to escalation, but that will not be subject to significant cost openers. In the case of a capacity-based tariff structured in the manner suggested above, the Request for Proposals would typically require bidders to bid on:

1. The Hourly Base Capacity Charge (which will be used in calculating the Hourly Capacity Charge and therefore the Monthly Capacity Charge)
2. The variable operations and maintenance charge (which will be used to calculate the Energy Charge);

3. In the case of a thermal generation facility, the heat rate (which is also used to calculate the Energy Charge); and
4. In the case of a coal-fired generation facility, the quantity of coal that is required to undertake a cold start, a warm start, and a hot start.

Bidders can either be required to bid a single Hourly Base Capacity Charge that applies during each year of the term of the Power Purchase Agreement, or they can be permitted to bid a different Hourly Base Capacity Charge rate for each year. A portion of the Hourly Base Capacity Charge that corresponds to the portion of the fixed costs that are attributable to fixed operations and maintenance costs is usually indexed to inflation, as is the variable operations and maintenance charge.

In the case of a project company that generates electricity using a non-dispatchable technology (primarily renewables), the RfP typically requires the bidders to bid an energy price stated in cents (or other currency units) per kWh or Dollars (or other other currency unit) per MWh.

Competitive Tenders for Tariffs with Cost Openers (Regulation by Contract)

A fixed-price tariff structure by its nature allocates several risks to the project company (and therefore to the sponsors and the lenders to the project). As a result, potential bidders will not submit a bid unless they are able to mitigate these risks to acceptable levels in advance of submitting their bid. To the extent bidders are not able to mitigate the risks, they will either (i) demand a risk premium for bearing the risk by increasing their bid price, or (ii) not submit a bid at all. In many cases, offtakers (and ultimately, through the tariff, electricity consumers) are in a better position to bear some types of risks. Allocating these risks to the offtakers will actually result in lower tariffs and an ability to finance projects that could not be financed if these risks were borne by the project company.

For example, in general, potential bidders will not submit a fixed-price bid without having reached agreement with an engineering, procurement, and construction (EPC) contractor as to at least the principal terms and conditions on which the EPC contractor will engineer, procure, construct, install, and commission the project, and the EPC contract price. This often leads potential bidders to invite an EPC contractor to join their bidding consortium. This creates several drawbacks. First, bidders need additional time at the beginning of the tender process to reach agreement with EPC contractors, which in turn need to reach agreement with their principal equipment suppliers. Second, if there are only a few EPC contractors in the market for the construction of a particular type of project, or only a few equipment suppliers capable of supplying the type of equipment that is necessary, there may not be enough EPC contractors for all the interested bidders. There is, for example, a limited market for EPC contractors that have the ability to construct complex hydroelectric projects in Sub-Saharan Africa, and there is a real danger that conducting a tender for a fixed-price tariff may result in some potential developers not being able to bid because EPC contractors are not available to team up with them.

Regulation by Contract is an alternative to the fixed-price tariff model. Regulation by contract has been used successfully to develop the most challenging of projects in emerging market economies. The essence of regulation by contract is the pre-specification, in one or more formal agreements (usually the PPA), of the formulas that determine the price an IPP will charge. This does not mean that the **price** is specified in the contract. Instead it means that the **treatment** of the individual cost elements that together determine the tariff are defined by a series of formulas contained in a contract.

In the context of an IPP, the fixed-price tariff model:

- Allows offtakers to conduct a truly competitive tender by describing in the tender documents the methodology that will be used to establish the tariff the offtaker will pay;
- Allows offtakers to allocate the risks discussed above in the most optimum manner, thereby lowering the tariff and ensuring that the broadest possible range of developers are interested in bidding to

develop a project; and

- Does not force bidders to associate with the limited number of EPC contractors that may be interested in constructing a technically challenging project.

In the case of a capacity-based tariff structured in the manner suggested above, the Request for Proposals for a project that uses a tariff set by the Regulation By Contract method would typically require bidders to bid:

1. The nominal annual yield the sponsors expect to earn on their investment, assuming that the actual plant availability equals the projected plant availability;
2. A cap on the development costs the IPP can include in the rate base that is used to calculate the Base Capacity Charge;
3. A monthly fixed operations and maintenance fee; and
4. A variable operations and maintenance fee.

The most economically advantageous bid would be selected by using a financial model to determine which of the bids result in the lowest net financial obligations for the offtaker per MW of capacity over the term of the PPA, stated in net present value terms. In order to effectively use a financial model to calculate the net present value of the offtaker's net financial obligations, it is necessary to use explicit assumptions as to (i) the contract price that will be payable under the EPC contract, (ii) the debt to equity ratio, (iii) the anticipated financial terms of the project loans, and (iv) a broad range of other assumptions.

In the negotiation of a PPA, the financial model is shared with all parties. It is essential that the offtaker, IPP, and lenders all have someone on their team to examine and audit the financial model.

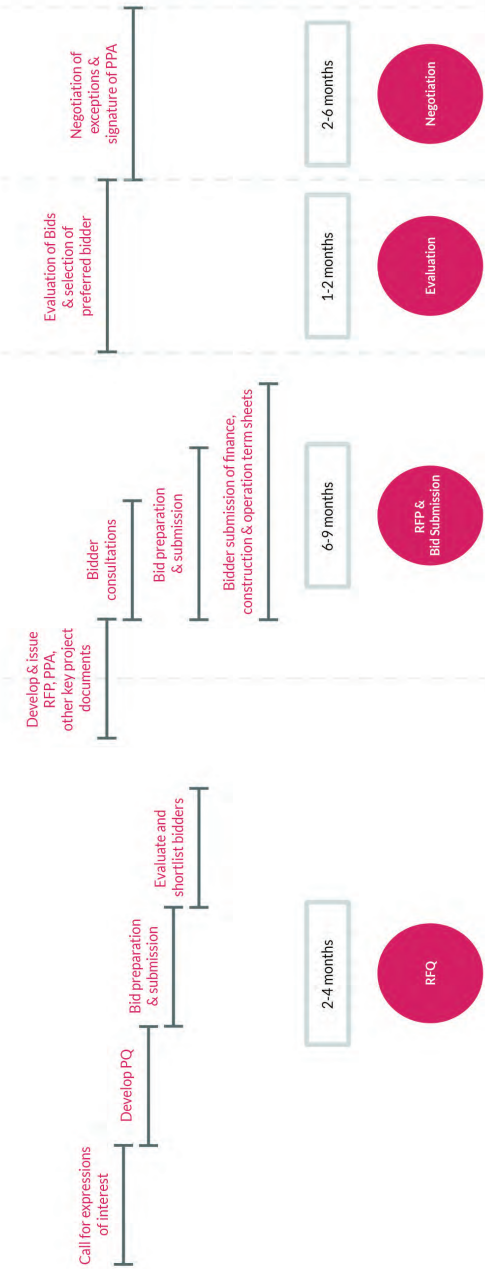
Under the regulation by contract approach, after the PPA has been executed, the IPP will be required by the terms of the PPA to (a) conduct an international competitive tender to select the EPC contractor and (b) arrange financing for the project. The Base Capacity Price will then be projected at financial closing using the actual contract price payable under

the EPC contract, the actual terms of the debt, and the actual development costs incurred to date, together with a projection of the development costs that will be incurred through the commercial operations date. These calculations will then be performed after the commercial operations date to determine the final Base Capacity Price.

The net result of this structure is that identified cost openers (items the cost of which will be decided after bids are submitted pursuant to the RfP) can be used to significantly reduce the risk to developers, which in turn can increase the number of pre-qualified bidders that submit a proposal and ulitmately result in a more competitve price.

Indicative Public Procurement Process:

The timelines reflected below are merely illustrative and may overlap.


Call for expressions of interest
Develop PQ
Bid preparation & submission
Evaluate and shortlist bidders
2-4 months
RFQ
Develop & issue RFP, PPA, other key project documents
Bidder consultations
Bid preparation & submission
Bidder submission of finance, construction & operation term sheets
6-9 months
RFP & Bid Submission
Evaluation of Bids & selection of preferred bidder
Negotiation of exceptions & signature of PPA
1-2 months
Evaluation
2-6 months
Negotiation

Invoicing and Payments

Invoices

In order to be paid for the energy it delivers, plus any applicable capacity charge, the seller will need to periodically invoice the buyer, in an amount denominated in the currency agreed in the PPA. The billing period is generally on a monthly basis. The invoice will generally include the following components: (a) capacity payment, (b) energy payment, (c) supplemental payments (including payments for any start ups above the agreed threshold), and (d) liquidated damages and penalty amounts owed to the buyer. The buyer has the right to review the invoice prepared by the seller, and if it disagrees with the amount payable in the invoice, it may request clarification and substantiation of such invoice within a number of days agreed among the parties.

Metering

An important element after the tariff negotiation is how to measure the energy and capacity to be invoiced to the buyer. The seller is typically responsible to buy and install meters to measure the output of the power plant. The net electrical output and capacity to be invoiced will usually be measured according to a metering code published by the regulator. The parties will agree on the meters (a main meter and a back-up meter) to be used for measurements, and the delivery points for those measurements. Those meters will be regularly inspected and tested by both parties. Representatives of both parties should generally be present on the date of reading of meters for invoice.

Payments

Undisputed payments must be made in the currency agreed by the parties to the power purchase agreement.

Currency: The currency of payment under the power purchase agreement is a negotiated issue that may vary from jurisdiction to jurisdiction. Sellers often have foreign exchange exposure in emerging markets. Foreign exchange exposure arises when a significant portion of the project costs have been financed in a foreign currency (e.g., US Dollars or Euros). If the seller is to be paid by the buyer in the local currency, it must ensure that it can pay back the lenders in the foreign currency.

The currency of payment will often depend on the strength of the local currency as well as how readily convertible the currency is. In situations where the local currency has a long history of stability and is generally regarded as being able to maintain this stability, the PPA will likely be payable in local currency.

In other markets without this stable history it is accomplished by: 1) benchmarking the amount of the buyer's payment in local currency to the foreign currency at the market exchange rate, or 2) the buyer paying the seller directly in a foreign currency.

As an alternative, the tariff may include a more structured foreign currency indexation formula. The indexation formula is used in cases where the seller can "hedge" the foreign exchange exposure. Hedging is generally available in markets where the local currency markets are highly liquid.

Method of payment: The method of payment is subject to agreement of the parties, but is often by wire transfer to a designated account of the seller.

Disputed amounts: Normally, if any portion of the invoiced amounts are disputed by the buyer, these will be withheld from payment and contested as part of the agreed dispute resolution mechanism under the power pur-

chase agreement. An interest rate will apply to all such withheld amounts which must be added to the payment as determined under the dispute resolution mechanism to be owed to the seller. In some cases the parties may agree that the amounts representing the disputed portions of the invoice will be put in an escrow account until resolution of the dispute.

Late payment: Any late payments (i.e., payments made after the due date agreed between the parties) will bear interest at an interest rate (either local interest rate or foreign interest rate) agreed between parties from the date on which the payment was due until the date the payment is made. The basis of the interest rate is generally the inter-bank rate for the monetary market published by the central bank of the country for local currency components or the LIBOR/EURIBOR for US/EUR foreign currency components.

Credit Support for Offtaker Obligations

Why Credit Support?

This section sets out some of the principal instruments or methods that are sometimes used to provide support for the payment obligations of the offtaker under the PPA.

This is an important issue particularly where there is some concern about the ability of the offtaker to meet its payment obligations over the term of the PPA. Concern about the ability of an offtaker to meet its long-term PPA payment obligations can arise for a number of reasons. A typical scenario in emerging markets is where the end-user tariff is not **cost-reflective** - in other words, the revenues generated by the offtaker from the sale of electricity to consumers at tariff rates are not reflective of the cost the offtaker incurs to procure the electricity from power producers (including cost of its own generation, where applicable) plus transmission and distribution costs. In this scenario, raising the utility's tariff to reflect actual cost is often not available as a policy option - at least in the short run - because of the adverse pressures this will create for consumers and the attendant social and political consequences. As a result, the offtaker is often not sufficiently creditworthy and will require government subsidies until such time as tariffs are fully cost-reflective. It is not possible to raise financing for an IPP that will sell capacity and energy to an offtaker in such a financial condition without some form of credit support.

Sovereign Guarantees and Letters of Credit

In emerging markets where the offtaker is a state-owned entity, lenders will sometimes require a guarantee from the sovereign to provide credit support for the payment obligations of the offtaker under the PPA. Under the guarantee, the state would agree to meet the payment obligations of the state-owned offtaker if it is unable to pay, as they become due. However, a guarantee is only really useful to the extent that a guarantor is of sound credit quality.

If there are concerns about the credit quality of a sovereign, then certain products can be obtained to address the risk of non-payment by the sovereign, including:

- A partial risk guarantee from the World Bank or the African Development Bank (AfDB),
- A Non-Honoring Sovereign Guaranty insurance policy from the Overseas Private Investment Corporation (OPIC),
- A political risk insurance policy from the Multilateral Investment Guarantee Agency (MIGA), and
- A guarantee from OPIC or an export credit agency.

In addition, letters of credit can address short term liquidity problems when used alongside credit support from a DFI or export credit agency. These letters of credit will be required to be issued by a financial institution of acceptable credit quality.

The issuance of sovereign guarantees to cover the payment obligations of state-owned offtakers under the PPA can materially enhance the ability of the government to attract foreign direct investment to finance large power projects. That said, a government that is asked to provide support in this form should, before it issues a guarantee or letter of credit, undertake a thorough analysis of the underlying project to satisfy itself that the power project is commercially sound. This sort of assessment will also enable the government to work out its potential financial exposure under the relevant guarantee or letter of credit should it choose to issue it.

For a number of reasons, governments are not always prepared to issue sovereign guarantees or letters of credit to provide explicit credit support for the payment obligations of state-owned entities. In some cases, the ability of governments to issue such forms of support are constrained by the government's need to maintain sustainable public debt levels. In these circumstances, governments will sometimes be prepared to issue letters of comfort which are not legally binding, but which give investors and lenders "soft comfort" that the government will not allow the offtaker to go insolvent and that it will step in to assist the offtaker to meet its obligations to its creditors. These forms of soft comfort are usually not sufficient to enable a project to attract large amounts of foreign investment.

Escrow Account

To address liquidity concerns, the offtaker may be required to establish an escrow account for its payment obligations under the PPA. The escrow account will be required to contain an amount equal to a certain number of monthly payments under the PPA - for example, based on total expected charges for a given number of months, or based solely on the capacity charge for a given number of months.

If the offtaker fails to make a payment when required under the PPA, then the project company can draw on this escrow account. This provides a buffer, so that the project company can continue to operate and to pay its debt service, even if the offtaker fails to pay. After any draw on the escrow account, the offtaker must immediately (or within a small number of specified days) replenish the account. If the offtaker fails to replenish the escrow account (or, in some cases, obtain some form of replacement security), it will be an event of default under the PPA. An escrow account is functionally equivalent to a letter of credit and can be used to address short-term liquidity issues.

Put and Call Option Agreements

Put and call option agreements are sometimes also used as mechanisms to transfer payment risk from the state-owned offtaker directly to the state.

A **put option** entitles the holder of the option, often the seller, to compel the state to purchase the power project at a pre-determined price upon the occurrence of certain trigger event(s)-primarily termination.

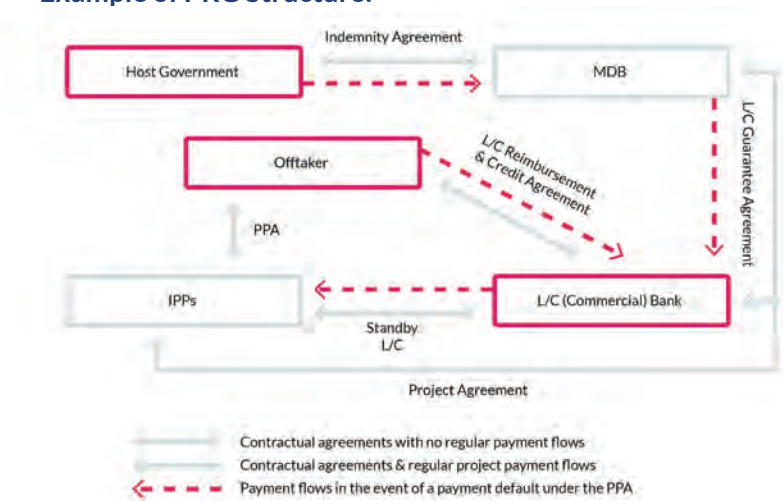
A **call option**, on the other hand, entitles the holder of the option, often the sovereign, to compel the seller to sell the power project to the state at a pre-determined price upon the occurrence of certain trigger events.

In both instances, the state ultimately ends up acquiring assets. The purchase in both instances will be determined such that the outstanding debt of the project company will be paid in priority to other claims, thus protecting the lenders. The formula for determining the purchase price will also take into account whether the relevant trigger event is a seller default, a buyer default or some other event. In the former case, the buyer would often not be entitled to recover its projected profits as part of the purchase price. This is discussed in further detail in *Post-Termination Obligations.*

Partial Risk Guarantees

Partial risk guarantees (**PRGs**) offered by multilateral development banks are also used as risk mitigation instruments in developing markets. PRGs can be especially useful where there are concerns about the ability of a state-owned buyer or the sovereign to meet their contractual obligations to a project. PRGs will typically give partial credit protection to private lenders in circumstances where the state-owned buyer or the state fail to meet their payment obligations under the PPA. The list of trigger events for PRGs is restricted to political risk events, including the non-honoring of a financial obligation by a soverign, including in respect of an obligation to purchase a power plant following the termination of a PPA. PRGs effectively transfer these risks to third-party multilateral institutions which are better able than private parties to manage them. The World Bank Group and the African Development Bank, for example, provide partial risk guarantee products (please refer to their respective web sites for details). These PRGs can be used to guarantee the repayment of both project loans by the project company and the obligation to reimburse a bank that has issued a letter of credit on behalf of an offtaker.

Example of PRG Structure:



Political Risk Insurance

MIGA and national export credit agencies also play an important role in providing forms of credit enhancement for power projects in developing markets.

MIGA provides political risk insurance primarily to support equity investments and shareholder loans within these projects.

National export credit agencies provide political risk insurance that can be used to protect lenders and/or equity investors against certain specified political risk events. It is worth noting that a national export credit agency cover is typically tied to exports from the country of the relevant agency. The underlying power project must have a significant percentage of export content from exporters in the export credit agency's country of origin to qualify for political risk insurance from that export credit agency.

Similar to a PRG, these products enable these risks to be externalised to a third party that is better able than a private actor to bear them.

Credit Support for the Project Company's Obligations

In this section, we will look at the nature of credit support that the host government and lenders may expect from the project company (and, in the case of limited recourse financing, the sponsors).

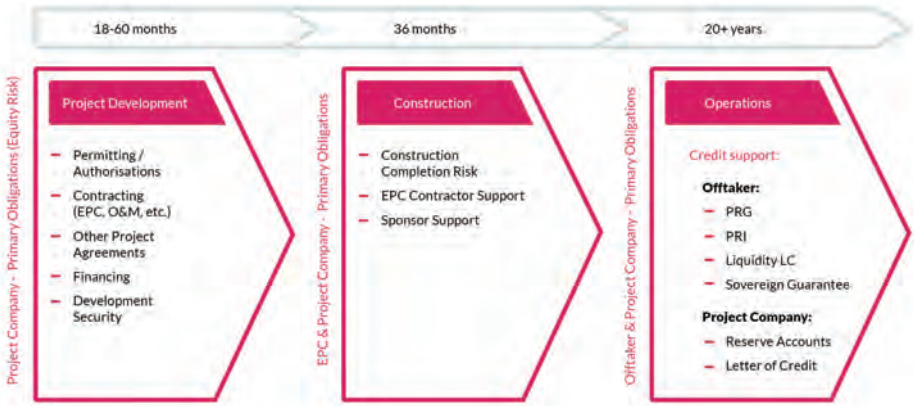
For the government, the negotiation and finalisation of a PPA often involves considerable expenses for the offtaker largely due to fees payable for legal, financial and technical advisory services. In incurring these expenses, the offtaker wants some assurance that the project company is fully committed to negotiating the PPA to its conclusion, arranging necessary financing in order to attain financial close, and diligently developing the project with a view to completing construction and timely attaining the agreed Commercial Operations Date (**COD**). Also, given that the offtaker usually procures the power for resale to distribution companies or consumers, it may also have binding contractual commitments to make a certain quantum of power available to them by agreed dates. For these reasons, the offtaker may insist on appropriately sized delay damages or default payments from the project company.

Given that the project company's primary initial obligation is to complete the power plant in accordance with operating specifications by the targeted COD, the need to obtain credit support for the project company is often limited to the construction phase of the project. It is worthwhile to note that where construction takes the form of an EPC contract, the construction risk will be shifted from the project company to the EPC contractor, with the latter being required under the EPC contract to provide a completion support guarantee or other security for its obligations.

From the perspective of the project company, it is essential to ensure that its liabilities under the credit support offered to the offtaker are no

greater than the liquidated damages payable by the EPC contractor and the credit support provided by the EPC contractor.

Below is an illustration of the evolution of a power plant facility from initial development (the process of putting together the relevant project documents and allocating risk to relevant parties) to commercial operations. The timelines reflected below are merely illustrative and may overlap.



Failure by the project company to achieve commercial operation by the scheduled COD may trigger delay-liquidated damages under the PPA. Similarly, failure to acheive minimum capacity and energy thresholds may trigger performance-liquidated damages. Failure of the project company to achieve commercial operation by the long-stop date may entitle the parties to terminate the PPA (and potentially other agreements). In any such case of non-performance, there will be financial consequences for the project company and the EPC contractor. In most cases, unless the reason for failure to achieve commercial operation is not capable of remedy, it would not be in the interest of the government to terminate the PPA. It may be quite difficult to attract new investors to a troubled project. To ensure that these financial obligations can be met, the host government, the offtaker

and the lenders will normally expect credit support from the project company and the EPC contractor in the forms described below.

Typical Credit Instruments During Construction

Performance Bond: A performance bond normally takes the form of a letter of credit or a bank guarantee. The value of this bond is normally a fraction of the investment value of the project and in theory should take into consideration the wasted cost incurred by the host government and lost generation capacity. In practice, the main purpose of the bond is one of deterrent value and is typically insufficient to cover the real cost suffered by the government in the event of non-performance.

Development Bond: In certain jurisdictions, the project company may be required to post a development bond in consideration for a government consent and support or concession agreement (note that a government support agreement is not a guarantee). If the project is unable to reach specified milestones for reasons attributable to the developer, and thus the PPA does not become effective at a given date, the offtaker may draw on the development bond.

Sponsor Support Agreement: Although this agreement is not part of the PPA, it is often a central condition for commercial banks to provide limited recourse lending. Essentially, this implies that any funding shortfalls during construction will be provided by the sponsor and that the sponsor may be required to set aside the value of the requisite funding commitment. Sponsor support will typically be required if the contingency budget in a project is small or the risk of cost over-runs are perceived to be particularly high. Well-resourced project sponsors/shareholders are well-placed to provide sponsor support.

Credit Support for the Fuel Supply Agreement

Fuel should be arranged in advance of the targeted commissioning date to enable testing and commissioning to take place. The fuel supplier will expect the project company to provide credit support for its payment obligations under the fuel supply contract.

For example, in gas supply contracts, credit support is normally in the form of a letter of credit (LC). In many instances, this would represent estimated gas supplies for a period of the operations. If the project company misses a payment for any given month, the gas supplier can draw on the LC. Should this happen, the project company will be expected to fund the LC. This mechanism provides the gas supplier with reasonable assurance that the project company will meet its payment obligations in a timely manner. Typically, the requirements for this credit support are established prior to financial close, but the actual financial instrument needs to be in place prior to first gas delivery. Once gas begins to flow through the gas pipes under the contractual terms, but prior to the commercial operations date, this LC is typically expected to be in place.

In general, the above obligations and instruments fall away at the commercial operations date, except for the LC for the gas (fuel) supply agreement which will be continued into commercial operations.

Other Credit Support Instruments Post-COD

Debt Service Reserve Accounts (DSRA): This is intended to enrich the credit of the project and to ensure that the project can meet its debt obligations even when payments from the offtaker are temporarily inadequate to service principal and interest. It is also used to guard against fluctuations in the foreign exchange rate where the currency of payments under the PPA is not the same as the currency for debt repayment. The DSRA is typically sized in an amount equivalent to a certain number of months of debt service payments and is funded from the date of first drawdown. Thereafter, the project company must top up the account in the event it is drawn down. The obligation to maintain the DSRA at the contracted level is normally negotiated as a component of the tariff formula.

Working Capital Letters of Credit: At the start of the operating life of a project, there is a mismatch of expenses and income. Significant expenses have to be borne by the project before there is income to cover it. In this instance, the project sponsor may be required to obtain a credit line or fund the initial cash shortfall such that the project can function as a going concern from the start.

Tax Exemptions

In an effort to incentivise investment in a sector, governments may sometimes provide incentives in the form of tax exemptions. These may take the form of a removal of taxes or reduction of taxes on certain specific items or equipment to be procured during the construction phase. These may also include exemptions from income tax for a certain number of years during project operations.

Tax exemptions may improve the project's financial viability and encourage investment, allowing a lower end-user tariff that will benefit consumers. Examples of the types of exemptions that may be granted are exemptions from custom import duties and levies on requirements during construction, reduced registration fees, negotiated levels for Value Added Taxes (**VAT**) and the granting of tax holidays during operations.

Tax and customs exemptions granted to a project will have to be approved by the tax authority and in some cases by the legislature or chief executive of the country. This process may take a significant amount of time. Where tax exemptions are contemplated for a power project, the parties will need to take this timing constraint into account during their negotiations.

It is important for the project company to use good tax advisory services to ensure that it identifies and takes advantage of all the possible tax benefits available in the host country.

Summary of Key Points

Tariff structures

- **Dispatchable**: The tariff structure for dispatchable technologies (thermal and large hydro) includes a payment for the capacity made available to the offtaker and a payment for energy that is actually dispatched the offtaker.
- **Non-Dispatchable**: The tariff structure for non-dispatchable technologies (wind, solar and smaller run of the river) consists primarily of a payment for the energy generated by the generation facility. A feed-in tariff may also be used to incentivise renewable energy projects.

Fuel Supply Agreements

- **Take or Pay**: Fuel supply agreements usually contain a take or pay clause which provides that the power producer must pay for an agreed quantity of fuel (typically gas) regardless of whether it actually takes that quantity.

Currency and Tax

- **Convertability Risk**: If payments under the PPA are in local currency and the debt for the project is a foreign currency, the power producer is subject to the risk of being unable to convert the local currency to satisfy the foreign currency debt payments. There are a number of different approaches to address this exposure in the PPA.
- **Tax Exemptions**: In order to attract investment into power projects, the host government may grant special tax exemptions which extend beyond the general rules applied to all companies.

Credit Support

- **Offtaker Credit Support**: The offtaker typically provides some form of credit support to further secure its payment obligations under the PPA. This may include some combination of sovereign guarantees, comfort letters, put and call option agreements, letters of credit, and an escrow account to provide payment liquidity.
- **Political Risk Cover**: Depending on political risk concerns in the host market, project lenders may require partial risk guarantees from multilateral development banks or other development finance institutions to provide additional investment protection under the PPA.
- **Seller Credit Support**: The project company typically provides some form of credit support to support its performance obligations under the PPA. The focus may be on the risk of project construction or on the project company's obligations under fuel supply and financing agreements.

Risk Allocation and Mitigation

Introduction

Development and Construction Phase Risks

Operational Phase Risks

Other Risks

Force Majeure

Insurance

Summary of Key Points

Introduction

The foundation of a successful and bankable power purchase agreement is the achievement of an equitable balance and allocation of risks amongst the contracting parties to the PPA. The age-old principle of contractual risk allocation in project financing rings especially true for PPAs, the essence of this principle being that **risks should optimally be allocated to the party best able to manage such risk.**

The management of the risks may best lie with a third party, for example, the contractor who has been appointed to undertake the construction of the power plant, or the transmission company responsible for building the interconnection facilities. However, those third parties are not the contracting parties to the PPA, yet the risk must be allocated to one of the parties to the PPA. So how is this gap bridged?

How such risks are to be mitigated is a necessary consideration within the PPA. Risks within the control of a third party assumed by one of the parties to the PPA may, for example, be passed to such third party through the use of back to back provisions in the PPA and the contract with the third party.

If a party takes on risk that is not usually allocated to that party, they will expect to receive some benefit for assuming such risk. In the case of the offtaker, the expectation could be that it would want to receive a lower tariff. In the case of a project company, the expectation could be an appropriate increase in its equity return for bearing that risk. Therefore, whilst a party may achieve a commercial win in passing on risk to its counterparty, that party ultimately is still bearing the cost of such risk in some form or other. An appropriate balancing and allocation of risk in a PPA should aim to provide sufficient incentive to the contracting parties to perform their obligations under the PPA.

Some risks are present throughout all phases of a project. Certain risks arise only during the development and construction phase, while others arise only once the project is operational.

This chapter seeks to explore the key risks that arise in the context of a PPA. The risks outlined in these chapters are not exhaustive. Risks and methods for their mitigation may also vary from project to project, depending on the jurisdiction, the underlying regulatory framework, the structure of the offtaker, and the particular generation technology, amongst other considerations. These various permutations are touched on in other chapters of this handbook.

Development and Construction Phase Risks

Pre-Construction

Land Procurement

The project company will typically bear the primary responsibility to procure the land on which the power plant will be developed and operated. To the extent that the offtaker and/or government owns, leases or grants a concession over such land, and is making such land available to the project company, then the responsibility may sit more appropriately with the offtaker. Similarly, where a government authority or entity controlled by the government or offtaker is the lessor of the project site, the project company will often seek additional comfort from the offtaker/government with respect to compliance by such lessor of the terms of the relevant lease arrangement. It is in the interest of both the offtaker and the project company to ensure that the right to occupy the project site is secured for the entire term of the PPA. If the term of the PPA can be renewed, then the right to occupy the project site should be secured for the extension period.

Failure to Commence

The offtaker will want reassurance that the project company will commence construction activity within a minimum period of time after the effective date of the PPA. Although the failure to commence construction may not be a direct result of the project company's acts, such as when an EPC contractor fails to execute its duties under the EPC contract, the potential liabilities associated with this form of default still rest entirely with the project company. Failure to commence construction within the defined time period will either cause the PPA to terminate automatically, or give the offtaker the right to terminate the PPA. The project company's failure to commence construction may also trigger payouts under construction or performance bonds.

There are often limited opportunities for a project company to cure a failure to commence construction. Some PPAs may provide the project company with the option to extend the commencement period, while at the same time paying liquidated damages to remedy the initial delay. If the delay is caused by a force majeure event (including a political force majeure event) or by a default by the offtaker (or any related party or governmental authority under any other project contracts), the time limit for commencement of construction will be extended day-for-day. This extension will continue for so long as the relevant force majeure event or default prevents the project company from commencing construction.

Construction

Abandonment

Following commencement of construction, the offtaker will also want to be sure that construction is proceeding and that the project has not been abandoned. Abandonment could take the form of a permanent suspension of the project's construction or operation, or could occur via constructive abandonment, where construction or operation has been suspended for a protracted period of time. In either case, abandonment of the project will constitute an event of default by the project company, entitling the offtaker to terminate the PPA. After the project is operational, the concept of abandonment and the applicable time period will vary, depending on the technology of the project, in order to account for different levels of intensity of the operation (for example, active management of a thermal plant vs. passive management of a solar installation).

Delays in Achieving COD

Construction of the power plant within an agreed time schedule is one of the primary obligations of the project company under the PPA. Accordingly, failure to complete the plant (i.e., achieve COD) within the applicable timeframe, will, in the absence of force majeure or other relief events, constitute a breach of the PPA, entitling the offtaker to claim delay-liquidated damages and/or ultimately, to terminate the power purchase agreement. The project company will in turn need to ensure that any obligation to pay delay-liquidated damages is passed through to the EPC contractor under the EPC contract (in which delay-liquidated damages will need to be sized to cover not only those payable under the PPA, but also debt service under the loan documents). The EPC contract should also provide that, upon termination of the power purchase agreement for prolonged delay, the project company is entitled to terminate the EPC contract and claim appropriate compensation.

Deemed Completion

There are a number of circumstances in which the project company (and its contractors) must be entitled to claim relief for delays. Relief may be given with respect to time only (i.e., the project company is given a time extension only), or both time and money, through the concept of **Deemed Completion**. Deemed completion occurs where completion is not achieved, as a result of risks for which the offtaker (and/or government) bears the risk. In such circumstances, deemed completion will typically be held to have occurred on the later of the relevant scheduled completion date and the date on which the plant would, but for the relevant risk event, have occurred. Upon deemed completion, the offtaker will be entitled to receive capacity payments (or deemed energy payments) sized by reference to the contracted capacity of the power plant. Thereafter, following completion testing, if the plant performance tests demonstrate a lower-than-contracted capacity, the project company will typically need to account for the difference.

Construction Cost Escalation

From the offtaker's perspective, one of the key objectives in tendering out or negotiating a power project for development by the private sector, is to establish price (and therefore tariff) certainty with respect to the capital cost of the project. The tariff will therefore be determined on the basis of a competitive bid or an agreed construction cost. The project company will in turn typically look to lock in the construction cost by negotiating a lump-sum, date-certain, turnkey contract with its EPC contractor. Thereafter, the basic principle is that the project company (under the PPA) and the EPC contractor (under the EPC contract) will bear the risk of any cost-overruns. There are however, certain exceptions to this rule. Where the construction cost increases as a result of a variation required by the offtaker or changes in law (see **Change in Law** below), the PPA should allow either for direct compensation to be payable by the offtaker to cover the incremental cost in construction, or for the tariff to be adjusted to cover the incremental capital cost (and any associated financing cost).

Site Access and Availability

There are a number of potential risks and issues associated with construction that relate to the site selected for the project. These include geological risk (i.e., whether the site is geo-technically suitable for the construction activity); archaeological risk (the possibility of archaeological discoveries being made during excavation/construction, and how such discoveries are managed); and any pre-existing environmental contamination that may be discovered during construction activities.

Right to Occupy

The project company's right to occupy the project site for the purposes of constructing and then operating the power plant is fundamental to the integrity and viability of the project. That right may take a variety of forms, ranging from outright ownership of the project site (potentially through acquisition from a third party), different forms of leasehold interest, concession arrangements or other rights to occupy. These will vary according to the jurisdiction and the circumstances of the particular project. The project company may also require additional access rights, easements or written consents in order to carry out construction activities with respect to associated infrastructure for which it is responsible, such as transmission lines. Access to the project site will also be required, not only for the construction, operation and maintenance of the power project, but also to afford the off-taker access to undertake whatever inspection rights it may have under the PPA.

Site Suitability

The project company will typically bear the primary responsibility for the suitability of the project site. Where the project company has had the opportunity to conduct full site surveys, including detailed soil sampling and geo-technical analysis, it may be reasonable for the project company/contractor to take responsibility for geological risk (i.e., whether the site is geo-technically suitable for the construction activity), particularly where the project company has been the primary driver for selection of the project site. Conversely, where the offtaker/government has effectively preselected the project site and/or the project company has had limited opportunity to conduct such reviews, it may be more appropriate for the offtaker to take such risk. This is particularly the case where the project site is effectively a brownfield site which is being made available to the project company. In such circumstances, the project company is likely to require appropriate protection, including time relief and deemed completion, as well as robust indemnities for third party claims with respect to any pre-existing environmental contamination.

Site-Related Infrastructure

It is generally the project company who determines and assumes the adequacy of road and rail links (or other transportation links) to and from the project site. This may also extend to the routing or rerouting of existing powerlines and water pipelines required for the supply of utilities to the project site. The availability of the supply of utilities to the project site is also typically the project company's responsibility, although this may vary where the offtaker or government authority or other related party is operating an adjacent site and enters into an express contractual undertaking to supply such services. Similarly, where it is agreed that a significant piece of infrastructure (such as a transmission line, gas pipeline or road) is to be undertaken by the offtaker or a government entity, the completion risk associated with such infrastructure may be assumed by the offtaker. Resettlement may also be required in order to acquire the project site. The impact on the timing of the project by a resettlement process should be carefully assessed by the contracting parties to the PPA.

Interconnection Infrastructure

The construction and operation of a new power plant needs to be supported by a whole host of supporting infrastructure. In addition to connection to the physical grid via transmissions lines which can vary from a few kilometers to hundreds of kilometers, the construction process also needs to be supported by the availability of utilities and access roads.

In terms of timing, the development of the power plant and associated transmission network need to be co-ordinated to ensue that the power plant is ready to be connected to the grid at the time of commissioning. This also requires planning ahead in terms of availability of fuel and the infrastructure to bring in such fuel.

Transmission Interconnection

The project company and the offtaker shall decide, typically at a very early stage, which party shall be responsible for the construction of the transmission line, as well as the ongoing ownership and maintenance of the line.

Construction by Offtaker

Commercially, the prime incentive for the offtaker to take on the obligation to construct the transmission line is to avoid the higher construction cost if construction is undertaken by the project company. The increased cost of construction by the project company will be passed back to the offtaker through a higher tariff.

The advantage of potential cost savings of construction by the offtaker must be weighed against two disadvantages:

1. The offtaker may not have a source of sufficient funds to undertake the construction, which is a problem facing many utilities in sub-Saharan Africa.

2. If the offtaker commits to constructing the transmission line, then the offtaker will also bear the responsibility if it fails to com-

plete the transmission line when the power plant is ready for commissioning. Under the PPA, this will normally result in the offtaker being required to pay liquidated damages to the power plant, calculated as if electricity is deemed to have been delivered. To reduce the risk of delay in implementing the construction, the offtaker will need to plan ahead in terms of financing and equipment procurement to ensure that completion can be aligned with the timing for completion of the power plant.

Construction by Project Company

Where the project company is responsible for constructing the transmission line, the offtaker will try to control the costs of constructing the transmission line, since these costs will ultimately be passed back to the offtaker via tariff. The offtaker can try to control these costs by requiring all major supply contracts to be subjected to competitive tendering, and by employing a competent engineer to oversee the implementation of the transmission line construction.

Delivery Point

Once the transmission line has been completed, the PPA identifies the obligation of the project company to deliver energy to a delivery point. The delivery point is a physical location that is specified in the PPA. The project company will want the delivery point as close to the power plant as possible. The offtaker would then take transmission line risk from and after the delivery point. However, this may be specifically negotiated, particularly where the transmission line will be operated and maintained by a transmission company that is unrelated to the offtaker. This is further discussed in *Power Generation Markets* above, in comparing bundled and unbundled systems.

Testing and Commissioning

Testing and Commissioning

Testing and commissioning of the power plant is required before the COD in order to ensure that the individual plant and equipment is functioning according to the design and the contracted performance output of the power plant. In addition to the testing of individual equipment, a complete power plant has to be tested to determine the overall output parameters, including, among others, installed capacity, voltage output, frequency and specific fuel consumption. The obligation to carry out tests and commissioning of the power plant rests on the project company, which has to make sure that experts and suitable test equipment are available when required before the COD. Sufficient notice must be given to the offtaker and lenders, since they may engage their own experts to witness the tests together with the project company's engineer.

Since part of the testing process for certifying the plant's capacity involves the generation of electricity, the offtaker must be prepared to receive that energy prior to the commencement of the testing and commissioning period. If the interconnector line or the network is not available, then pursuant to the terms in the PPA, the project company may claim liquidated damages for delayed COD, which may include evoking the deemed completion clauses in the PPA. Therefore, there is need for close coordination of the requirement of either party before and during commissioning of the power plant and related facilities, including the transmission line where applicable. In case the offtaker's facilities are not available when testing and/or commissioning is required, the project company may exercise the right to claim appropriate damages, including deemed capacity and energy output. The offtaker therefore should carefully evaluate its capacity to undertake its obligations to meet the requirements of the testing and commissioning of the power plant.

Failure to Meet Contract Capacity

Testing and commissioning may reveal lower than contracted outputs and/or failure to meet required performance levels, such as dependable capacity, specific fuel consumption (heat rate), and other issues. Depending on how far the departure of the test results are from the specified output, there may be a need to rectify the plant to meet acceptable performance output, which may result in delays in achieving COD.

If there is no possibility for improving the performance of the power plant, then there are typically two options for the offtaker:

1. To accept the resulting output, with relevant penalties for not achieving the guaranteed output.
2. To reject the deal, and therefore terminate the PPA.

The PPA will contain relevant clauses to address the reduced performance output levels (usually addressed in the capacity charge payment of dispatchable generation plants). In case the test results are not acceptable, then the PPA may have to be terminated or amended substantially, with other remedial actions taken to improve the performance to acceptable levels. The project company bears the risk of performance of the power plant throughout the term of the PPA.

Output/Heat Rate Risk Allocation

Upon testing, if the plant output and fuel consumption capacity fail to meet the contracted performance levels, the project company may have recourse through its EPC contract to make claims against (i) the EPC contractor and (ii) the equipment manufacturer's warranties and guaranties. It is important to note, however, these protections are not directly available to the offtaker under the terms of the PPA, since the offtaker is not a party to the EPC contract or the equipment supply contracts.

Operational Phase Risks

Market Risk

The offtake obligations

The offtaker's obligations to purchase the capacity of, and the energy generated by, a power plant (the **offtake obligations**) will be structured somewhat differently depending on the nature of the power project.

With respect to dispatchable power plants (in particular thermal power plants and hydro power projects with sizeable reservoirs), the offtake obligation will generally be structured as an obligation (i) to pay for capacity made available (or deemed available) to the offtaker and (ii) to take and pay for energy dispatched by the offtaker and delivered by the project company to the delivery point.

With respect to technologies that are dependent on interruptible renewable energy sources (notably wind and photovoltaic solar projects), the obligation will typically be structured as an obligation to take and pay for energy actually generated by the power plant or that could have been generated by the power plant in the absence of a curtailment.

In both cases, the basic principle is that the market risk (the risk that the capacity of the power plant or the energy generated by it may not be necessary) should be allocated to the offtaker rather than the project company. In a situation where generation is available, the offtaker must still make payments regardless of whether the project company actually dispatches the power plant or "takes" the electricity generated.

These payments are typically referred to as **availability payments** or **deemed energy payments** and are structured to ensure that the project company's capital costs (debt service, return of equity and return on equity)

and fixed operating costs are covered. In cases where the power plant is unavailable or incapable of generating electricity as a result of circumstances for which the offtaker (or government) has agreed to take the risk (including, among other things, political force majeure, force majeure affecting the offtaker, change in law, unavailability of the grid, and offtaker default), the project company may be entitled to **deemed availability** or **deemed energy** payments that are also intended to cover capital and fixed operating costs. These contractual devices are crucial to the allocation of risk in a power project.

Curtailment

Notwithstanding the basic principle described above, certain offtakers and/or the relevant transmission system operator may want to reserve some flexibility with respect to the commitment to take interruptible energy through **curtailment rights**. This will be a keenly negotiated issue. From the project company's (and the lenders') perspective, they will want certainty that the minimum offtake commitment will cover all fixed costs (including debt service and a minimum equity return). They may request that the PPA provide for an extended term if curtailment rights are exercised, or they may get comfortable with curtailment rights under the circumstances of the project.

Performance

The contracting parties will agree, when entering into the PPA, what the contracted capacity of the power plant will be. In order to reach the COD, the power plant must be tested and certified as having met a percentage of the contracted capacity. This is generally referred to as a minimum capacity requirement. This testing typically involves participation by the project company, the offtaker and any independent engineer appointed by the parties. For power plants that are paid both a capacity charge and an energy charge, the tested capacity at COD may (depending on how the tariff is structured) determine the capacity charge the offtaker will pay to the project company. This testing is generally repeated on an annual basis, and in each instance the newly tested capacity will impact the capacity charge payable to the project.

If the power plant achieves or exceeds the minimum capacity requirement by the agreed date for the scheduled COD, but still does not achieve the contracted capacity, then the project company may have the option of either repairing or replacing the impacted portions of the power plant within an agreed period of time in order to achieve the full contracted capacity. At a certain point in time, the project company may be required to live with the capacity it has been able to demonstrate, and will no longer have the ability to increase the tested capacity up to the contracted capacity by fixing the deficiency and demonstrating the higher capacity of the power plant. In the event that the minimum capacity is not achieved by the agreed outside or long-stop date for COD, the offtaker will typically have the right to terminate the PPA. Some PPAs may restrict the project company from delivering any energy in excess of the tested capacity locked in at COD, or may simply specify that the offtaker is not required to pay for such additional amounts.

In PPAs where the tariff comprises both a capacity charge and an energy charge, because the offtaker is being required to pay for capacity of the plant, it will typically want to ensure that this capacity is available for its use. As such, an offtaker will typically impose minimum availability requirements. Availability is typically measured over an agreed period of

time. Minimum availability thresholds are typically negotiated by the parties and are uniquely dependent on project site conditions such as ambient conditions, the particular technical makeup of the power plant and other efficiency criteria provided for in the PPA. The PPA would then provide a remedy to the offtaker for a failure by the project company to meet the minimum availability thresholds. This may take the form of a right to terminate the PPA or the payment of performance liquidated damages by the project company. In any event, under a well-stuctured tariff, the offtaker should not be required to pay for capacity that is not made available to it.

Dispatch

Under the PPA, the project company is required to strictly comply with the dispatch instructions of the grid operator. The project company takes the risk of any operational failure to dispatch. The grid's dispatch protocol can be referenced by the PPA and becomes part of the PPA, or can be part of the transmission connection agreement to be signed between the project company and the transmission company. Dispatch plans are delivered to the project company to cater for monthly, weekly, and daily load planning purposes.

Special Considerations for Renewable Energy Projects

The allocation of performance risk in renewable energy projects is complicated by the generation profile for these projects, namely the fact that power generation is subject to the intermittent availability of the renewable resource.

In renewable energy PPAs, the offtaker only pays for the energy that is delivered. The obligation of the offtaker to pay at the tariff rate for delivered energy is sometimes capped at an amount set forth in the PPA, with any excess energy being remunerated at prevailing spot prices if there is a spot market. While the offtaker may insist upon a minimum capacity requirement, that threshold should be considerably lower than for dispatchable plants because of the inability of the project company to control the output of its renewable energy project.

To state it plainly, renewable energy projects are in many ways subject to the whims of the sun, the rain and the wind, and are unable to guarantee a particular capacity on any particular day.

Similarly, while the offtaker would prefer to set a minimum availability requirement in order to support their projected net power capacity, shifting this risk to the project company may severely deter investment in renewable energy projects. A compromise solution is to establish minimum availability requirements that are substantially lower than dispatchable power plants, in order allow the project company flexibility to weather unforseen environmental variables while still leaving the offtaker with the confidence that the project could be terminated if the lower availability requirement is not met for an extended period of time.

Fuel and Other Feedstock Supply

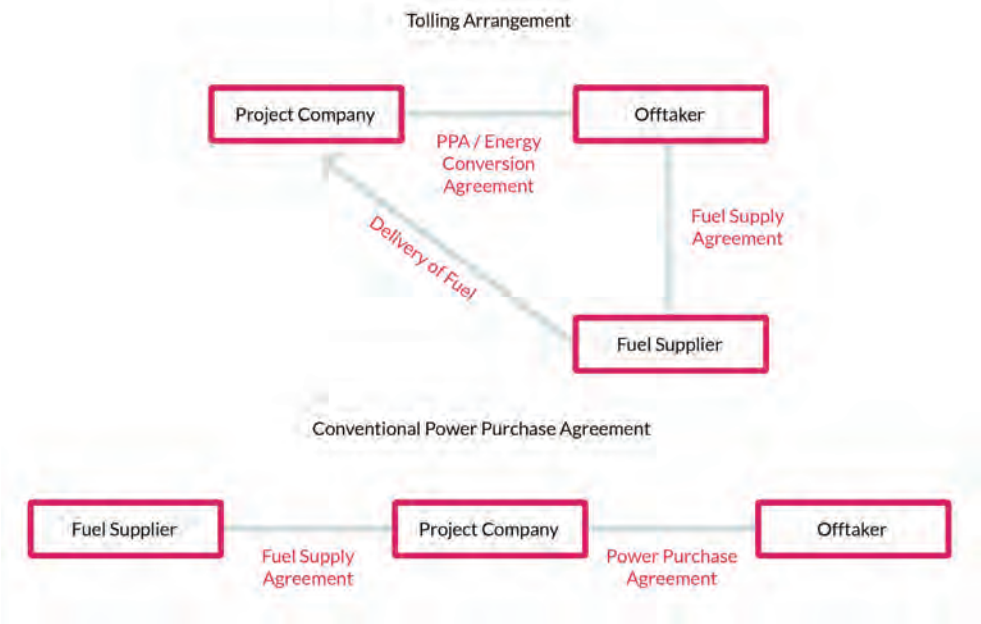
The long-term adequacy of supplies, and the pricing for, fuels and other supplies of feedstock is one of the most critical elements in a power project. The allocation of fuel supply risk will depend on a number of issues including, in particular, which party is in the best position to negotiate the supply, the financial viability of the fuel supplier, the availability/accessibility of alternative fuel suppliers, and the the state of development of the relevant market for fuel supply.

Tolling Arrangements

Project companies are not always in the best position to negotiate and secure a stable supply of a fuel resource such as oil, coal, natural gas, biomass or steam. The offtaker or government may be better placed to do so. In such circumstances, the offtaker may prefer to structure the power project as a tolling arrangement. This may make sense, particularly where the fuel supplier is owned by government or affiliated with the offtaker.

Under a tolling arrangement, the offtaker takes full responsibility for the procurement (including payment) and supply of fuel to the power plant. If the offtaker wishes to dispatch the power plant, it needs to ensure that a

sufficient volume of fuel is delivered to the power plant to allow the electricity it dispatches to be generated. The project company will then take responsibility for ensuring that the fuel delivered to the power plant is utilised in an efficient manner. This is accomplished by requiring the project company to convert fuel into energy at an energy conversion rate that reflects the agreed efficiency of the power plant given the ambient atmospheric and transmission conditions.



Under a tolling arrangement, therefore, the offtaker or the host government will enter into fuel supply agreements directly with third party fuel suppliers and be responsible for the fuel resource payment. Then the offtaker will enter into a separate agreement, which may be called a power purchase agreement, a tolling agreement, or an energy conversion agreement, with the project company. This will contain both the conventional

PPA terms and certain terms for the fuel supply. For ease of administration, the project company may give instructions directly to the third party fuel supplier for the delivery of fuel, and agree to protocols for nominating quantities of fuel to be delivered, and for taking deliveries of that fuel, but the project company should not bear responsibility for payment, nor the risk that the fuel supplier may breach its obligation to deliver the fuel properly nominated by the project company.

Fuel Supply Agreements

Offtakers will often seek to pass greater responsibility onto the project company for procuring fuel supply, however, and require the project company to enter into a fuel supply agreement with a third party fuel supplier. The project company will then need to contract for sufficient volumes of fuel to meet its contractual commitment to make the power plant "available" under the PPA, so that, if the offtaker elects to dispatch the plant, the project company has sufficient fuel to generate. Conversely, it is important that the project company does not contract for quantities of fuel which it cannot use, or the project company will be making unnecessary payments for excess fuel that cannot be used to generate power.

A detailed analysis of fuel supply agreements is beyond the scope of this handbook, but the project company will need to ensure that a number of key issues are covered, including:

- A binding legal obligation on the part of the fuel supplier to provide the contracted quantity of fuel. This can be contrasted with a "best endeavours" type of obligation, which creates the risk of fuel supply failure with little or no remedies for the plant developer;
- Appropriate levels of flexibility with respect to monthly and annual contracted quantities to cater for circumstance in which the power plant is not dispatched;
- Appropriate protections with respect to the supply of off-specification fuel. The fuel needs to meet certain specifications. The offtaker should be entitled to receive liquidated damages from the fuel supplier to cover additional costs incurred as a result of burning off-spec fuel (including the increased use of filters and stoppage time for cleanups and startups);

- To the extent that the project company is assuming responsibility for fuel supply under the terms of the PPA, the project company will also need to ensure that any liability it incurs under the terms of the PPA for non-availability due to fuel supply failures are passed through to the fuel supplier. It is often difficult or impractical to obtain agreement from a fuel supplier to bear such liabilities; and
- Alignment of the commencement of the fuel supply with the commissioning and testing of the power plant under the PPA to ensure the availability of fuel to test the plant before the scheduled COD provided for in the PPA. However, the fuel supply start date should not be too early, or the project company may end up paying capacity payments under the fuel supply agreement well before the fuel is actually needed.

It is important to note, in addition, that liabilities that the project company incurs under a fuel supply agreement in respect of a take or pay obligation will, where appropriate, need to be passed through to the offtaker under the PPA. In other words, to the extent that the project company is liable to pay for fuel that is not taken due to a risk assumed by the offtaker under the PPA, the offtaker will need to indemnify the project company for this liability.

As a result, a number of the provisions of the fuel supply agreement will be of direct interest to the offtaker. As explained in *Tariff Structures* above, the fuel price will usually be a direct pass-through under the PPA (assuming that the fuel is converted into energy at the agreed efficiency). It is therefore important for the offtaker, as part of project due diligence, to review and ensure that the fuel cost is reasonable and consistent with industry rates. The offtaker should also review the minimum take-or-pay commitment for fuel in the fuel supply contract. Given that the contractual commitment for plant availability is always lower than 100% factoring in periods of maintenance, it is important that the minimum take-or-pay commitment for fuel is not so high as to create a payment obligation for fuel for periods when the fuel is not being utilised due to planned maintenance. In the same vein, the project company should aim to align the scheduled maintenance of the power plant with the scheduled maintenance

of the gas facilities (in the case of a gas-fired power project) as a misalignment may lead to the plant being unable to produce power due to on-going maintenance of the fuel facilities.

It is also important to note that the existence of a separate fuel supply agreement between the offtaker and the fuel supplier does not necessarily mean that the offtaker must take full fuel supply risk under the terms of the PPA. The offtaker's ability to accept fuel supply risk under the PPA will depend largely on its recourse to the fuel supplier and/or its access to readily available alternative sources of fuel. If the fuel supplier is the only or primary viable source of fuel supply, the offtaker will need to ensure that, on a fuel supply failure, it has recourse to the fuel supplier on a full indemnity basis for any shortfall in revenue, any penalties payable under the terms of the PPA, and ultimately the loss suffered on termination of the PPA. The offtaker will also need to consider the credit status of the fuel supplier. Will the fuel supplier have the financial resource to pay out on such an indemnity? If not, what sort of credit enhancement is available in the form of liquidity support and/or guarantees (including, if necessary, sovereign guarantees)?

Fuel Transportation Arrangements

These considerations may involve further complexity if there is a division of responsibility for supply and transportation of fuel. Depending on the proximity of the plant to the fuel source, and the nature of the fuel, it may be necessary to enter into a separate agreement with a transporter for transporting the fuel from the fuel processing facility to the plant. This of course would likely increase the risk elements of the project, as the fuel supplier could transfer title and risk of the fuel to the fuel transporter or the project company at a delivery point that is still far from the plant.

Where the fuel supplier commits to delivering the fuel to the delivery point at the power plant, the fuel supplier will bear the risks associated with ensuring that fuel of the right quantity and specification reaches the delivery point at the plant. Where, however, there is a separate contract for transportation of the fuel, that contract would apportion risks among the fuel supplier, the transporter, and the project company. The delivery of

off-spec fuel to the plant, for instance, may not be the fault of the fuel transporter, but may result from off-spec fuel being provided to the fuel transporter by the fuel supplier, in which case the project company should have recource to the latter through the remedies provision of the fuel supply agreement. Where the fuel transporter is publicly owned, the project company may make an argument for the offtaker to bear the risk of non-performance or defective performance by the fuel transporter, in addition to fuel transportation force majeure. However, depending on how well capitalised the public fuel transporter is, it may be able to bear such risks on its own, which also avoids the political challenges of one government entity (the offtaker) bearing the risks of another government entity (the fuel transporter).

Transmission

In a **bundled system**, the market roles of power purchasing, transmission and distribution are all bundled into one entity: the offtaker. The offtaker usually bears responsibility for transmitting the power that is produced and sold by the project company. Similarly, the offtaker in this system will have the obligation to keep the power plant connected with the power grid.

By contrast, an **unbundled system** is one in which one or more of these roles is not the responsibility of the offtaker, and is handled by a different entity. The extent of this separation is dependent on the specific electricity reform path adopted in a particular jurisdiction.

There are unique transmission risks in an unbundled system. The core concern in an unbundled system is the creditworthiness of the unbundled transmission company and whether it can afford to cover the risk of failing to transmit when the power is: (i) ready for delivery; and (ii) required under the PPA. From the offtaker's perspective, transmission risk is outside their control, and therefore not a risk they wish to bear. From the project company's perspective, they likewise will have limited control over transmission risk and will argue that it should be borne by the party with more leverage in the jurisdiction: the offtaker. This is particularly true in situa-

tions in which the offtaker and the transmission company have an established relationship (i.e. both are government-owned parties or part of the same holding company). The project company will argue that the government as a whole is benefitting from the delivery of power and should therefore bear the risk that one of its entities does not connect the power plant or transmit the power when needed. As a result, PPAs in an unbundled power market will often allocate most or all of the transmission risk to the offtaker so that the offtaker acts as as a guarantor of the transmission company's obligations.

Foreign Exchange

Where financing is provided in a currency other than that in which payments are made under the PPA, the project sponsors will need to take steps to protect themselves against fluctuations in foreign exchange rates. There are two risks that arise when a project's revenue is in a local currency:

- The local currency may not be freely convertible (i.e. cannot exchange the local currency for a major currency); and
- The host government may not have a foreign currency reserve that is sufficient to meet the conversion needs throughout the life of the project.

If any of these convertibility risks exist, the parties should consider mitigating the risk through a combination of government guarantees and insurance.

Foreign exchange rate fluctuation

Ideally, financing for the project should be obtained locally and in the host country's currency to avoid exchange rate risks. However, this is rarely possible in emerging markets where there is an underdeveloped banking industry and limited capacity for lending. Where financing for the project cannot be obtained in the local currency of the host country, and the tariff cannot, for whatever reason, be denominated in the foreign currency in which investment was made and financing is obtained, the project com-

pany will need to seek funding in an alternative currency and protect itself against short-term fluctuations (but not catastrophic devaluation) in exchange rates.

Mitigation of short-term exchange rate risks is commonly achieved through one or more of the following means:

1. All tariff components are denominated in the funding currency and the offtaker is required to pay electricity fees in the local currency equivalent to the electricity fee denominated in the funding currency;
2. Entering into derivatives and future currency swap arrangements with creditworthy counterparts; and
3. Government undertaking to make up losses due to exchange rate fluctuations (a less commonly seen approach).

While the above are effective in mitigating against short term currency exchange fluctuations, neither is capable of protecting the project company against catastrophic devaluation risk. In the event of a catastrophic devaluation of the host country's currency, it is unlikely that the end-users or the host government will be able to afford the increase in tariff or shortfall payments for an extended period of time. Mitigation of the risk of a catastrophic devaluation is usually best achieved through insurance in the form of a currency hedge.

Convertibility and remittance

In jurisdictions where the local currency is not freely convertible, and foreign currency is required to make debt payments and distributions, the project company could face difficulties in securing access to foreign currency in which the investment was made and debt is being serviced. While the host government would normally provide an undertaking to ensure the convertibility of currency throughout the term of the project, convertibility and remittance risks remain on two fronts:

1. Breach by host government of its undertaking on convertibility; and

2. Lack of foreign currency reserves to meet its conversion obligations.

Mitigation against such risks can be achieved in a number of ways:

1. Build up an offshore debt service reserve account which should help to create a buffer for short-term conversion obstacles;
2. Swap for other valuable commodities in lieu of cash payment; and
3. Obtain political risk insurance cover on currency inconvertibility.

Other Risks

Compliance with Law and Change in Law

The offtaker and the government will likely require the project company to contractually commit in the PPA to comply in all material respects with the laws of the relevant country. The project company should in turn be able to commit to do so, at least by reference to applicable laws at the outset of the project on the basis of legal due diligence and advice. The project company (and by extension its lenders) will, however, find it difficult to give an unqualified commitment to comply with laws to the extent that laws may change over time.

The concept of **Change in Law** has evolved to include (i) the introduction of new law, (ii) modification of existing law and/or (iii) changes in the interpretation of law by any court, tribunal, governmental entity or other authority which has applicable jurisdiction or regulatory oversight with respect to the Project or the Project Company. "Law" in this context should be defined to cover a comprehensive range of legislative, statutory and regulatory instruments, orders, guidelines etc.

Timing - there may be some debate beween the offtaker and the project company as to the date from which any Change in Law should be considered. This will often be the date of signature of the PPA. However, where the project company has committed to a tariff in the course of a tender process, it may be more appropriate to set the date at the date of submission of the project company's proposal (in response to the RFP). This is an issue that can sometimes be resolved by due diligence to determine whether a Change in Law has occurred that might have an impact on the project company's cost structure. However, depending on the transparency of legislation in the jurisdiction, and the time available to the project company to perform such due diligence, it may make more sense for the off-

taker to add this incremental risk to the risk of changes in law after execution of the PPA, which it will often already have agreed to take.

A Change in Law may impact the project company in a number of ways:

1. It may adversely affect performance of a particular obligation under the PPA or render peformance impossible;
2. It may adversely affect the project company's revenue stream;
3. It may require the project company to incur a one-off capital cost or cause an on-going increase in the project company's operating costs (in each case, in order for the project company to comply with the relevant change in law); or
4. Conversely, it may lead to a reduction in the project company's operating or forecast capital expenditure.

Subject to appropriate materiality thresholds, the project company and off-taker will generally agree that the project company should be left in no better or worse position than if the relevant Change in Law had not occurred. Thus, to the extent the project company is temporarily unable to perform an obligation as a result of a Change in Law, this will not constitute a project company default and any time limits imposed on the project company will be extended accordingly. Furthermore, to the extent that the Change in Law causes a delay in COD, the plant may be "deemed complete" and to the extent that the plant is unavailable as a result of such Change in Law, the project company may be entitled to Deemed Availability or Deemed Generated Energy payments. In addition, to the extent that the project company incurs an increase in costs or decrease in revenues as a result of a Change in Law, this will entitle the project company to receive either (i) direct compensation to pay for or reimburse the project company for such cost or revenue shortfall, or (ii) an appropriate tariff increase. Conversely, if the project company benefits from a Change in Law, then an appropriate downward adjustment in the tariff will typically apply.

To the extent that a Change in Law renders performance under the PPA impossible, the project company will generally be entitled to terminate the PPA with the level of compensation applicable assessed in the same way as termination for Political Force Majeure.

Consents, Permits and Licences, Lapse of Consent

Project Company's Responsibility to Secure Consents, Permits and Licences

Offtakers understandably want power plants to be built and operated in accordance with the consents required by the applicable law.

The project company is typically responsible for obtaining the necessary consents to build, own and operate the power plant. These include, amongst others: a construction permit, an environmental license, an archaeological permit, and an operating permit. The term **consents** is generally understood to include any registration, declaration, filing, consent, license, right, approval, authorisation, or permit.

Offtaker's Obligation to Assist in Securing Consents, Permits and Licences

It is not the case that all obligations regarding consents reside with the project company. Because the offtaker is often affilliated with the government, it is anticipated that the government will have some connections to, and influence over, other government agencies. In addition, as an established entity in the domestic market, the offtaker is often more familiar with the legal and regulatory requirements for operations in the market. As a result, the parties will typically agree that the offtaker should be obligated to offer "reasonable assistance" to the project company in obtaining consents. Ultimately, this is in the interest of all of the parties, including the lender, who will need the assurance that the project company has obtained all of the necessary consents.

Joint Coordination for High-Level Approvals

In certain instances, the parties may agree that the responsibility to obtain particular consents from higher levels of government are a joint responsibility. Such approvals might include consents of the relevant authorities (such as cabinets, parliaments, ministries of finance, ministries of energy, tax authorities, regulators, and central banks). Since such consents are often necessary for the effectiveness of a PPA, it generally makes sense that both parties would work together to ensure that they are obtained on time.

Rights to Land

The obligation to obtain rights to the land on which the power plant, and the relevant transmission lines, will be located, will vary from transaction to transaction and jurisdiction to jurisdiction. In jurisdictions where the government owns all of the land or large areas of land where the power plant is intended to be located, the offtaker will often be expected to grant, or cause another government entity to grant, the necessary land rights to the project company. In other jurisdictions, however, it is incumbent upon the project company to secure access to, and the right to use, the land. In such instances the offtaker may still be called upon to assist the project company in obtaining such rights, especially where private land owners are unwilling to sell their land and the government can use its right of expropriation or eminent domain (the right of a sovereign or its agencies to acquire private property for public use in exchange for fair compensation).

The nature of land rights also varies from jurisdiction to jurisdiction. Where the land system does not provide freehold title, the term of use (or lease) of the land must be sufficient to cover the life of the project.

Lapse of Consent

Where a government authority fails to grant or renew a consent upon due application of the project company, this will be treated in the same way as a Change in Law. This is sometimes referred to as a **Lapse of Consent**. Note that where the project company is unable to complete the requisite formalities to obtain or renew a consent as a result of a Change in Law, the Change in Law protection should nonetheless apply. It bears noting

that the concept of Lapse of Consent is sometimes referred to in PPAs as a policitical force majeure event, with the same net effect.

Change in Tax

Changes in tax may severely impact project revenue and could result in making a project fundamentally uneconomical. The change may come in the form of a change in tax rate, the creation of a new class of tax, or removal of relevant tax benefits that may adversely affect the project's return on investment and/or its ability to service its debt. The consequences of a change in tax may:

1. Increase or decrease project costs;
2. Increase or decrease the maintenance and operation costs; and
3. Increase or decrease the revenues expected by the project company.

Material issues to consider in relation to the management of change in tax risks includes the following:

Reference Date by Which Change in Tax is Measured

A change in the tax position must be defined relative to the tax position at a reference date. The reference date is commonly agreed between the parties and could be the date of the signing of the PPA or the date of financial closing.

Whether the Change is Discriminatory in Nature

In determining which party shall bear the risk of change in tax, distincion is normally drawn between three categories of changes:

1. Changes that are applicable specifically to the project and the involved sponsors, contractors and lenders only (**Disciminatory Change in Tax**);
2. Changes that are applicable to the industry in general or similar class of investors (**Specific Change in Tax**); or

3. Changes that do not fall into the above two categories and are applicable to the general community (**Non-discriminatory Change in Tax**).

For Discriminatory Change in Tax, the offtaker is normally expected to bear this risk by means of tariff pass through. In other words, any increased tax charges are included in the tariff calculation of project costs, and therefore the offtaker has to pay a tariff that is reflective of the extra tax charges. For Non-discriminatory Change in Tax, the project company is normally expected to accept this as part of the risk of conducting business in the host country. In relation to Specific Change in Tax that is not discriminatory in nature, this is often open to negotiation between the parties.

Mitigating the Risk of a Change in Tax

Mitigation measures against change in tax are normally implemented through one or more of the following:

- Host government undertaking and political risk insurance
  An undertaking by competent government authority(ies) of the host country that no change in tax, imposition of new tax, or removal of tax benefits shall be applicable to the project company, its sponsors and contractors throughout the life of the project. The project company can further mitigate this risk by obtaining political risk insurance to insure against breach of the undertaking by the host government.
- Tariff Pass Through
  The tariff is designed to allow full pass through of any increase in tax, imposition of new class of tax, or removal of tax benefits during the term of the Project that are "discriminatory" or "specific" in nature.

Change in Control

Just as important as assessing the viability of a project being developed by the project company in determining whether to finance a project, both the lenders and the offtaker also undertake an assessment of the project company itself, and the parties in control of the project company. The reputation of these parties, and their experience and track record, all influence the offtaker and lenders in assessing whether the project company will have the ability to meet its obligations under the PPA. It therefore becomes important to both the offtaker and the lenders that the project company's shareholders be restricted from unilaterally changing the control of the project company.

PPAs normally contain explicit provisions on the meaning of control and what constitutes a change in control of the project company. The PPA could provide that a change in control of the project company cannot occur without offtaker consent. Typically, the PPA will state that the offtaker cannot unreasonably withhold its consent. Alternatively, a change in control may only be allowed after a prescribed time period (this may be aimed at, for example, locking in the parties for the initial loan term, or for the construction phase). Further conditions may be imposed that if a change in control has to occur, then it cannot reduce the local content requirement of the project company, or that the new entities must have the same reputational standing as its predecessor. The latter may be quite a subjective assessment. The restrictions and conditions will vary from project to project.

The project company may also have an interest in changes in control of the offtaker, particularly in those jurisdictions undergoing an unbundling of the electricity supply industry and the restructuring of a monopoly utility offtaker. Where sovereign support has been provided for the offtaker's obligations under the PPA, this issue may be less important to the project company. However, where no such support has been provided and the investment grading, reputation and sophistication of the offtaker were key considerations for the project company and the lenders when concluding the PPA, then the offtaker may be similarly restricted from undergoing a change in control without the project company's consent. There may also

be conditions imposed on the offtaker that, for example, the restructured offtaker have the same investment grading as its predecessor or an obligation that sovereign support be provided.

Political - Sovereign Risk and Expropriation

A PPA is a commercial agreement for the supply and purchase of electricity between a private developer and an entity frequently owned by the government. There is a risk that the government may decide to interfere in the functioning of the plant, directly or indirectly, with the result that the project company is no longer able to generate project revenues. In turn, this will jeopardize the project company's ability to service its debt, as well as shareholders' return on equity. Such interference is typically provided for either under local political force majeure or a separate provision dealing with government risk events.

The consequences of expropriation should be addressed in the PPA. Expropriation may be in relation to the physical plant or shares in the project company, and the PPA should cover both instances. In the former case, the government could deploy security personnel to physically take over the plant, and in the latter case the government could compulsorily take over ownership of shares in the plant. There is need for clear definition of actions that come within this umbrella, including nationalisation, confiscation, requisition and other related actions.

It may also be necessary to make provisions for creeping expropriation, which usually refers to situations where the government does not directly expropriate a plant but takes measures that ultimately ensure that the project company is no longer in effective control of the plant, including onerous regulatory impositions and restrictions in foreign currency purchase or repatriation where the PPA tariff is denominated in local currency. Such measures may be covered in provisions dealing with local political force

majeure or change of law or tax which, unless compensated for by the offtaker, could spell doom for the project.

It is also important for the PPA to provide for what is not expropriation. Otherwise, the government may find itself facing severe penalties for taking legitimate actions that are not generally recognised as amounting to expropriation. Governments are usually able to take measures for regulating economic activity in the country, including health and environmental safety measures, and tax related measures. However, such measures must be made in good faith and not be discriminatory in nature or primarily intended to confiscate private property. Also, where a project company has contractual agreements with government-owned companies responsible for associated infrastructure, such as transmission and gas transportation, it is also important to distinguish between expropriation, which is essentially a political act, and commercial disputes, which should be dealt with in accordance with the remedies provided for in these agreements.

Developers typically argue that expropriation should be treated as a termination event under the PPA, for which the project company should be fully compensated for the expected revenue stream over the life of the PPA. The precise calculation of the termination payment is discussed in **Post-Termination Obligations**. In any case, compensation under PPA termination may or may not be appropriate, depending upon the extent to which the offtaker is independent from the government. The more independent the offtaker is, the better the argument that the project company and the lenders should cover the risk of expropriation in some other way, rather than expect the offtaker to pay them in full in such event.

In addition, all parties should consider whether the offtaker will have a source of funds to make any termination payments in the event of expropriation. Ideally, this obligation would be supported by a sovereign guarantee, but that may be prohibitive to obtain.

Where there is a separate agreement dealing with the compensation regime, such as a Put and Call Option Agreement, it should clearly provide

for exactly what the payout should be in the event of expropriation, to avoid any ambiguity.

A developer may also consider getting political risk insurance from an institution like the Multilateral Investment Guarantee Agency (MIGA), which is part of the World Bank Group. The benefit of MIGA insurance is not just the certainty of a payout in the event of expropriation, but more importantly, it significantly reduces the likelihood of expropriation due to the reputational risk for the government and the likely adverse collateral impact on its perception in other international transactions.

Force Majeure

It is important to have a clear provision dealing with force majeure in a PPA, which will set out the meaning and consequences of force majeure. It may also specifically describe what is not covered within the scope of force majeure in the PPA.

Key Features of Force Majeure

In general, force majeure tends to have the following defining features:

- The event has material adverse impact on a party's ability to discharge contractual obligations.
- The event is not the fault of the party seeking relief and is beyond the reasonable control of the party.
- The event could not have been reasonably foreseen by the party, and reasonable measures could not have been implemented by a diligent party to avoid it or mitigate its impact.

Sometimes, the definition extends beyond the event itself to the continuing impact of the event. For instance, when there is a major unexpected flood that damages a power plant, and it takes up to a month for the flood water to be drained out before the commencement of damage assessment, the force majeure relief claimed could go beyond the day of initial flooding and also extend to the continuing impact of the flooding.

It is also important to clarify what is not covered within the scope of force majeure. Where a power plant is down because of poor maintenance, it does not fall within the scope of force majeure. This would also be the case where the project company has failed to contract for sufficient quantity of fuel to enable it to produce the full contract capacity.

Types of Force Majeure

Force majeure under a PPA could be placed in a number of categories, the key ones being Local Political Force Majeure, Foreign Political Force Majeure and Natual Force Majeure.

Local Political Force Majeure tends to cover events that are either caused by the government of the host country or could be best prevented, controlled or mitigated by the government. Events in this category would include widespread riots and civil disorder, acts of terrorism, and nationwide industrial strikes. The scope could also extend to lack of transmission grid availability to evacuate the power from a power plant where it is owned by the government, as well as unavailability of any other associated infrastructure needed by the power plant which is publicly owned or controlled. Some element of change in law could also fall within the scope of local political force majeure, such as the host government's introduction of restrictions on capital repatriation which prevents scheduled payments to offshore equity and debt providers.

Foreign Political Force Majeure tends to cover acts of a political nature that are of foreign origin but still have a material adverse impact on a party's ability to continue with PPA obligations. For instance, an industrial strike in a foreign country could mean that a critical piece of plant equipment, such as a replacement turbine, manufactured in that country, cannot be exported to the country where the power plant is located. A trade embargo could also have a similar impact.

Natural Force Majeure covers events such as flooding, hurricanes, earthquakes, tsunamis and other adverse weather or natural conditions that have a material adverse impact on a party's ability to meet its contractual obligations.

Extension of Force Majeure

Typically, a PPA will provide for force majeure relief to extend beyond the PPA to other project agreements that the PPA parties are also party to, including the fuel supply and transportation agreements, the EPC contracts and the transmission agreements. As such, where the occurence of a force majeure event prevents the fuel supplier or transporter from supplying fuel to the power plant, the project company may be able to seek relief from its contractual obligation under the PPA for minimum plant availability. Given the fact that a PPA counterparty may wish to seek force majeure relief for events that occur under other agreements, it is important to aim to have a harmonised concept of force majeure across all the project agreements. Otherwise, there is a risk that an event that is defined as a force majeure in the transmission agreement, for instance, may not feature as a force majeure event under the PPA. Consequently, on account of the misalignment, that event may not qualify a party for relief from its other contractual obligations.

Relief from Contractual Obligations As a Result of Force Majeure

As has been discussed, a party claiming force majeure usually wants relief from contractual obligations during the duration of the force majeure event. If the force majeure period is protracted, the PPA would usually identify how long relief from contract obligations will be granted before the unaffected party can seek contractual termination.

In a PPA, it is often important to draw a distinction between force majure affecting the offtaker and the project company respectively. Where the offtaker is affected by force majeure, the PPA would usually provide for continuation of capacity and energy payments to the project company during the period of the force majeure. If the effect of the force majeure event affecting the offtaker is to delay the COD date, the project company may be entitled to claim a **deemed completion**. In that instance, the project company may be entitled **deemed capacity payments** that cover debt service

(which would have commenced on the original COD date) and any additional project costs incurred as a result of the delay.

Where the force majeure affects the project company, the impact on capacity or energy payments may depend on the specific type of force majeure. Such payments would typically continue in the case of Local Political Force Majeure, but could be suspended in the case of Natural or Foreign Political Force Majeure. Also, a project company affected by force majeure may still be able to produce some power even if it is below the contract quantity, and provision should be made in the PPA for such power to be purchased and paid for nonetheless.

Specific Remedies as a Result of Force Majeure

Although the primary form of relief in the case of force majeure may be the suspension of certain contractual obligations, there are also other forms of specific remedies for force majeure that may be provided for in the PPA. One common example is an extension of certain time periods under the contract in order to account for the delay caused by the disruptive event. If the force majeure delay occurs during the construction phase, the project company should be entitled to an extension of the time period for achieving COD. If the force majeure delay occurs after COD, the full term of the contract should extended to account for the delay. Other project agreements should be aligned accordingly.

Insurance

From the planning to the construction and operation phase of the project, there are a multitude of risks that are best mitigated by means of insurance.

Construction Phase

During the construction phase, the EPC contractor shall be primarily responsible for obtaining insurance against property damage and injuries to personnel. Types of coverage include:

- All Risks (Property Damage) insurance - this type of insurance usually covers the replacement cost of the project plant;
- Employers Liability insurance - this type of insurance usually covers the liability of the employer for disease, fatality or injury to employees arising out of workplace conditions or practices; and
- All Risks Marine Cargo insurance - this type of insurance usually covers the replacement cost of plant and equipment shipped to and intended to become part of the power plant.

Commercial Operation Phase

Upon commencement of commercial operation of the plant, the project company shall bear the responsibility of obtaining and maintaining all risks (property damage) insurance and employer liability insurance.
In addition, the project company may also want to obtain political risk insurance against the host government reneging on its undertaking or guarantee on the following (if any):

- Undertaking on free convertibility of currency and sufficiency of foreign reserve;
- Undertaking on no change in law or tax, or on cancellation of tax benefits that may adversely affect the project;
- Cancellation of permits or concessions; and/or
- Expropriation.

In all cases, the exact insurance cover required for a particular power project will be determined on a case-by-case basis in consulation with a specialist insurance adviser. Lenders will typically require the appointment of an insurance adviser to advise them on the adequacy of the insurance program for the power project.

Summary of Key Points

Risk Management

- **Allocation of Risk**: The risks inherent in the PPA should be allocated to parties best equipped to mitigate that risk.
- **Seller Risk**: The seller will typically bear the risks associated with their construction and operation obligations under the PPA. This may include the risk of failure to commence construction, failure to reach the contract Commercial Operations Date or the failure of the constructed plant to satisfy the capacity requirement.
- **Exception to Seller Risk**: The seller may be excused from a failure to meet its obligations when the delay is a result of the buyer's action (or inaction). In this case, the seller may be granted additional time or compensation for any additional costs incurred in resolving the delay.
- **Buyer Risk**: The risk of lower-than-expected demand in the power market is typically allocated to the Buyer through the use of capacity payments, in the case of dispatchable projects, or through the use of deemed energy payments, in the case of non-dispatchable renewable energy projects. The buyer may also take on fuel supply risks through the use of tolling agreements.

General Risks

- **Force Majeure**: The seller or offtaker may be released from obligations under the PPA due to the occurence of events that are beyond their control and which they could not reasonably have foreseen. In addition to the release of obligations, the sellers may also be entitled to receive capacity payments if certain force majeure events occur.
- **Stabilisation Clauses**: Changes in tax and in laws may pose risks for sellers because they can fundamentally alter the economics of the original agreement. The PPA will typically include terms that allow the seller to be made economically whole in the event of a material change.
- **Change in Control**: PPAs may seek to restrict the ability of sellers to change their controlling shareholders since offtakers may have offered to enter into the PPA on account of the financial strength of the majority shareholder in the project company. Lenders may have similar concerns.

Other PPA Provisions

Introduction

Resolving Disputes

Expiration of the PPA

Local Content

Confidentiality

Boilerplate Provisions

Summary of Key Points

Introduction

This chapter deals briefly with some important matters that are typically dealt with in the PPA but that do not necessarily fit neatly into the other chapters of this handbook. For instance - How will the parties resolve any disputes? What happens when the PPA comes to the end of its term? How might local content requirements impact the PPA? How are matters of confidentiality dealt with? Finally, what basic contractual provisions must be in the contract that are relatively non-negotiable, or that only the lawyers lose sleep over? This chapter sets out to answer those questions and more.

Resolving Disputes

Goals of Resolving Disputes

Disputes happen. Even after reading this guide and negotiating a sound PPA with all of the proper advisors in place, and despite best intentions - things do go wrong and circumstances will change. After all, the PPA is a long term contract and parties cannot always know with certainty what will materialise over a period which sometimes can extend to 30 years!

When a dispute does happen, it is in the interests of all parties to resolve these disputes as quickly and efficiently as possible. The purpose of dispute resolution mechanisms are to ensure that whatever type of dispute arises, it gets resolved fast so the parties can revert to performing their respective obligations under the PPA. When a dispute is prolonged, nobody wins.

Disputes arise for a variety of reasons. These disputes can relate to a range of issues, including technical or financial issues, for example, an invoicing dispute, a dispute in the way the power is metered, or an interpretation of an industry term. Disputes can also relate to an interpretation of the contract, especially around areas relating to the manner or timing of each party's obligations.

Informal Resolution Mechanisms

The best thing parties can do when a dispute arises, is to talk to each other. Having an ongoing dialogue between the parties after the completion of the PPA can help to quickly resolve most disputes. If the technical staff are not able to work out an issue, it might help to include a discussion between senior management of both the offtaker and the project company.

A requirement for talking before going to formal dispute processes is typically captured in the PPA. PPAs normally require that parties negotiate in

good faith before undergoing any type of formal dispute mechanism. Without demonstrating that the parties tried to amicably resolve the dispute, other more formal mechanisms may not be available. This may be necessary to force the parties to talk to each other.

Formal Resolution Mechanisms

When informal mechanisms fail to resolve the issue, the PPA will provide for various formal resolution mechanisms.

Fast Track Dispute Resolution

Other alternative forms of fast track dispute resolution can be considered. These will often include provisions for immediate decisions rendered for certain types of "simpler" disputes, usually related to technical or invoicing issues.

The types of disputes that can be covered by this can be pre-defined. The parties can also choose whether or not the fast track decisions will be binding.

Role of the Independent Engineer

For technical issues such as the achievement of COD, metering, measurement or capacity issues, the dispute can be submitted to an independent engineer. The independent engineer can give an opinion that can help resolve the dispute. There could also be particular identified issues where the determination of the independent engineer shall be binding on the parties.

The list of issues that can be submitted to an independent engineer can be agreed on during the negotiation stage. This can be included in the PPA. The mandate of the independent engineer is usually recorded in a separate agreement between the independent engineer and the PPA contracting parties. The PPA parties can decide together if they wish to pre-appoint the independent engineer when entering into the PPA, or they can agree to decide later.

Mediation

There can also be provisions for non-binding mediation. This process utilizes a neutral party to facilitate a discussion between the offtaker and project company. The outcome of this can be a recommendation which can help resolve the dispute quickly.

Arbitration

Arbitration is the process used in PPAs to resolve the disputes that cannot be resolved through informal or fast track resolution mechanisms. Unless the PPA includes provisions requiring the parties to use arbitration, the dispute would be submitted to the courts that have jurisdiction over the parties and issues.

There are various options for pre-established procedural rules for arbitration including the World Bank's International Centre for Settlement of Investment Disputes (**ICSID**), the International Chamber of Commerce (**ICC**), the United Nations Commission on International Trade Law (**UNCITRAL**), or the London Court of International Arbitration (**LCIA**).

Each of these procedural rules include provisions for issues such as the qualifications of the arbitrators, the number of arbitrators, the method of appointing arbitrators, the confidentiality of the proceedings, the powers of the arbitrator, fees and costs of the arbitrators, and the force of the awards. One advantage of arbitration proceedings is that the parties to the dispute maintain some flexibility to structure the proceedings in a way that fits best for the issue in dispute.

The Seat of Arbitration

The PPA should outline the **seat** where any dispute resolution proceedings will take place. The seat sounds like it is where the arbitration will physically take place, but it is important that the seat not be confused with the venue of the arbitration. The seat is important because the law of the seat will (either favourably or unfavourably) fill in gaps not catered for by the arbitral rules, impact on the role of the courts with regard to the independence of the arbitrators, and might even override certain arbitration rules.

The law of the seat can even influence the ultimate enforceability of any award. Prudent contracting parties would undertake a comprehensive due diligence of the chosen seat.

Host countries often seek to have their own countries be chosen as the seat, while international investors usually prefer a seat related to their home countries or other common jurisdictions for international finance. Many of the lenders will require that the seat of arbitration be somewhere outside of the host country to ensure that the process is perceived as neutral.

Choice of Law

The interpretation of the PPA may vary significantly depending on which country's laws govern the interpretation of the PPA.

Optimally, the same governing law would be chosen for all the project documents. But this is an ideal scenario, and often does not materialise practically in view of the matrix of project documentation in a power project.

When choosing the governing law, it is important to consider disputes which may occur across various project agreements where different governing law applies to the different agreements. Issues of joinder and consolidation of disputes should also be carefully assessed and considered.

Enforceability of Arbitral Award

Parties often prefer arbitration to litigation due to the enforceability of an arbitral award. An arbitral award may be enforced in any country which is a signatory to the New York Convention (Convention on the Recognition and Enforcement of Foreign Arbitral Awards).

Outside the Contracts - the Role of Investment Treaties

It is important to note that many host countries are signatories to various investment treaties. Investment treaties are agreements between states in which each state party promises to provide certain types of treatment to investors from the other state party. States commit to treat foreign companies "fairly and equitably" and are required to provide **full protection and security** to investments.

It is important to note that compliance with domestic law is not a defence to a breach of an investment treaty. Even if the government's action is entirely consistent with its own law, it may still be inconsistent with the investment treaty. It is important for investors and host countries to understand what treaties may apply in the resolution of any dispute.

Expiration of the PPA

At the expiry of the term of the power purchase agreement, including any extensions that may be applicable, the power plant may either be transferred to the government, sold to a third party, continued to be owned by the original developer, or decommissioned.

Transfer or Continued Ownership

At the expiry of the term of the PPA, depending on the structure of the deal, the plant may be transferred to the host government. In some cases, the party may also have the ability to sell the plant to a third party. Provisions related to the end of the term of the PPA will regulate what happens in that scenario. In any case, during the negotiation phase of the PPA, the possibility that the plant may retain a residual value at the end of the PPA term should be recognised.

Where the developer of the power plant retains ownership of the plant at the end of the term, and does not transfer it to the offtaker or host government, it may choose to enter into a new PPA or otherwise operate the power plant and sell power on a spot basis.

Decommissioning

In some cases where the power plant may have no more use for generation, the project company may have the contractual obligation to decommission the plant in a manner that complies with the legal and environmental requirements. This varies based on the legal and regulatory framework and the type of technology.

The decommissioning obligations would include dismantling and removal of the power plant equipment from the project site, and a site cleanup and restoration to the satisfaction of the government. The cleanup activity may include land refill if required for the subsequent use of the land. The environmental obligations may last for several years after the expiry of the power purchase agreement.

Local Content

Several countries have developed laws and policies requiring local content. These laws and policies can be found as stand-alone documents, sector-specific documents, or within national procurement laws. Sometimes they may feature as regulatory or licence requirements by the electricity regulator in the country. The general aim of these laws and policies is to increase economic linkages between foreign investment and domestic markets.

Local content can take many forms. Ownership, local manufacturing, local labour, services, materials and equipment, technology transfer, and training of nationals are a few examples of local content requirements.

Local content provisions are generally not a requirement in PPAs, and are often not included (particularly in countries with policies or legislation on the topic). Local content provisions are more likely to be found in the RfP or the concession or implementation agreement between the project company and the host government. Local content provisions are not necessarily a strict requirement, but may also be a statement of intent or incentives.

When local content provisions are applicable, the parties need to understand the implications for their project. This is because local content provisions may have an impact on the tariff and financing options, and may be in conflict with international investment treaties entered into by the host government.

Confidentiality

Most PPAs include a confidentiality provision that requires both parties to maintain the confidentiality of sensitive commercial or technical information. There may be exceptions for disclosures that are required by law, courts, or regulatory authorities.

Confidentiality provisions may be complicated by policy concerns around the general power market. The government and offtaker may wish to keep confidential any financial incentives or other measures that were provided to attract initial project investments. The government may also be concerned that the more generous terms offered for certain projects may prejudice its ability to negotiate lower tariffs for future projects. This desire for confidentiality must be balanced with transparency and public accountability concerns. The need to engage and build trust with the public is especially important given that consumers will eventually bear the costs of the power project.

Boilerplate Provisions

In addition to the aforementioned obligations that reside in a power purchase agreement, it is worth noting (if only briefly) the existence of the little-loved boilerplate provisions. These lonely provisions occupy the more remote corners of most power purchase agreements and have the impressive ability to make even the most scrutinising reader's eyes glaze over after even the most cursory review of their headings. Suffice to say, these provisions do exist for various reasons, including to ensure the enforceability of the bargain struck by the buyer and the seller in the meatier and more interesting portions of the PPA. Boilerplate provisions are rarely controversial, but are a necessary component of the PPA.

This section highlights some of the boilerplate provisions you may see at the back of a PPA.

Limitation of Liability and Indemnification

The PPA will normally contain provisions limiting the liability of each party to the other party. Such provisions will usually exclude liability by either party to the other for remote or unforeseeable losses (i.e., consequential loss or loss of profits). As a general principle, the compensation or damages payable under the PPA by either the Seller or the Buyer should be contractually agreed and clearly defined amounts (i.e., liquidated damages).

There is also a related provision dealing with indemnification and sole relief. The former may provide that each party will indemnify the other party for losses suffered or payments made as a result of the negligent, wilful or reckless acts or omissions of the other party. The latter may state that the sole relief available to the parties are contained in the PPA.

Sometimes, an minimum annual threshold is agreed beyond which indemnification will be made. This is generally aimed at avoiding the administra-

tive inconvenience involved in constantly seeking indemnity for small amounts.

Indemnification for third party death or injury is normally unlimited.

Governing Law

The PPA will provide for the governing law applicable to the PPA. Provisions of general law which may apply automatically or might otherwise allow a party to apply to a court for an amendment to the contract (such as financial hardship clauses) should, to the extent legally possible, be excluded. This is to ensure that the substance of the commercial transaction, as agreed by the parties in a mutually negotiated contract (in other words, the PPA), is not unduly eroded.

Amendment of the PPA

The PPA, like most agreements, will typically include a provision dealing with amendments to the PPA. Sometimes, following the execution of the PPA, as the project company steps up efforts to raise financing for the construction of the plant, different prospective lenders scrutinising the PPA and other project documents may request that certain provisions be amended, due to their perception of how various risks could imperil the revenue stream of the project needed to pay off the project loans.

Usually, amendments need to be agreed in writing by both parties to the PPA. Depending on the particular jurisdiction, there may be a requirement for regulatory and/or parliamentary approval for the amendment before it becomes effective.

Summary of Key Points

- **Dispute Resolution**: There are a number of mechanisms established to prevent termination of contracts. These include mediation and arbitration which seek to settle disputes between the parties. Under certain circumstance the parties may still have recourse to the courts
- **Expiration of the PPA**: When the term of the power purchase agreement expires, the parties can agree to either transfer the plant, sell the plant, or decommission the plant. Alternatively the project company may retain and continue to operate the power plant.
- **Local Content**: Governments may be inclined to put in place laws or policies to increase economic linkages between foreign investment and domestic markets. These requirements may, however, limit financing options due to conflict with international investment treaties.
- **Confidentiality**: Special obligations may be established under the PPA to address confidentiality of privileged information. .
- **Boilerplate**: The PPA will typically include a signficant number of back of the document provisions including, limitation of liability, indemnification, governing law and others.

Default and Termination

Introduction

Buyer Default

Seller Default

Post-Termination Obligations

Non-default Events

Lender Rights

Summary of Key Points

Introduction

Parties entering into a contract like a power purchase agreement usually do so with the best intentions that this long-term contractual relationship will endure for the full term the parties contracted to be together. The PPA should ideally be structured to encourage the parties to maintain and sustain the contractual relationship.

This chapter first seeks to provide guidance on the circumstances and events which may lead to the non-defaulting party exercising a right to terminate the PPA. The list of default events in this chapter is not exhaustive, and always has to be considered against the particular PPA concluded and the legislative and policy framework of the jurisdiction in which the power plant is located.

This followed by an anlysis of the consequences of termination and the remedies to the non-defaulting party. Particular attention is paid to the calculation of termination payments, whether directly under the PPA or under a put and call option agreement or a similar arrangement.

The chapter moves on to explain events which occur as a result of no fault of either party, known as "non-default events". These events ultimately give the parties the right to exercise an option to terminate the PPA, for example, a prolonged force majeure event.

There is also a discussion of the rights of the lenders under termination circumstances.

PPAs typically do not contain hair-triggers which may lead to termination as this is not in the interest of the offtaker, the project company, or the lenders.

Buyer Default

Typical buyer events of default which may lead to the right by the seller to terminate the PPA are set out below. The cure periods are merely illustrative and usually negotiated between the contracting parties. The applicability of any of these events to a project largely depends on the type of PPA contracting structure. Guidance on the various PPA structures are provided in other sections of this handbook.

Failure to pay	Failure to pay any amount due to the seller within a prescribed cure period after receipt of notice that such payment is overdue
Insolvency	Bankruptcy and insolvency events, which include appointment of liquidator, administrator, trustee, custodian or similar in a proceeding brought against the buyer or appointment and failure to discharge the appointment within [90]* days in proceedings brought against the buyer
Misrepresentation	Misrepresentation that has a material adverse effect on the seller's ability to perform its PPA obligations if the misrepresentation (if capable of being cured) is not cured within [30-60]* days of notice
Failure to meet buyer construction milestones	Failure of buyer to achieve buyer construction milestones for reasons not attributable to force majeure nor the default of the seller (related to buyer interconnection infrastructure and assets and any other associated facilites that the buyer is required to construct) following a cure period that is reasonable, given the complexity of the associated facilities the buyer is required to construct and the potential impact of delays on the critical path timeline for the construction of the power plant
Default under another key project document	The occurrence of a buyer event of default or government event of default under another key project agreement

Change in law	The occurrence of a change in law that, in each case for a period of [90 to 180]* days • Renders a material undertaking of buyer void or unenforceable; • Renders a material right of the project company void or unenforceable; and/or • Restricts repatriation of dividends or the payment of loans, which effect is not mitigated by credit enhancing undertakings by the government to cover for such events
Assignment	Assignment of the PPA (including by reorganisation or privatisation of buyer) in violation of any provisions of the PPA that prohibits the assignment of the PPA
Material breach	Any other material breach by buyer following notice and failure to cure within 30 days of notice (or commence curing within 30 days and cure within [90 – 180]* days)

** The number of days is indicative and has to be negotiated between the parties.*

Seller Default

Typical seller events of default which may lead to the right by the buyer to terminate the PPA are set out below. The cure periods are merely illustrative and usually negotiated between the contracting parties. The applicability of any of these events to a project largely depends on the type of PPA contracting structure. Guidance on the various PPA structures are provided in other sections of this book.

Failure to reach financial close	Failure to achieve financial closing within [90]* days of required financial closing date for reasons not attributable to the buyer's default
Insolvency	Insolvency events (appointment of liquidator, administrator, trustee, custodian or similar in a proceeding brought against the seller or appointment and failure to discharge the appointment within [90]* days in proceedings brought against the seller)
Misrepresentation	Misrepresentation that has a material adverse effect on the buyer's ability to perform if the misrepresentation (if capable of being cured) is not cured within [30-60]* days of notice
Failure to commence construction	Failure to issue the notice to proceed to the EPC contractor within [10-15]* days of financial closing
Failure to achieve COD	Failure to achieve COD within [180]* days of the scheduled COD for reasons not attributable to force majeure or the default of the buyer / failure to reach COD by the long stop COD
Abandonment	Abandonment of the project for [30]* days or more
Insurance	Breach of project company's obligation to maintain insurance (following notice, and other than a result of the non-availability of such insurance on commercially reasonable terms)

Consents	Failure to maintain governmental consents (other than as a result of a failure of the government to issue those consents following the submission by the project company of the application for the consent together with the supporting materials that are required by applicable law to be submitted with the application, and the payment of the applicable fees required by applicable law)
Failure to operate according to prudent operating practice	Persistent failure to operate in accordance with prudent operating practice or prudent utility practices
Availability thresholds	Failure to achieve minimum levels of availability, sometimes combined with a failure to propose and implement a remedial plan that is designed to return the levels of availability to the minimum levels of availability within an agreed period of time
Assignment	Assignment of the PPA in violation of any provisions of the PPA that prohibit the assignment of the PPA
Change in control	Change in control of the seller without consent
Material breach	Any other material breach by seller following notice and failure to cure within [30] days of notice (or commence curing within 30 days and cure within [90 – 180]* days)

** The number of days is indicative and has to be negotiated between the parties.*

Post-Termination Obligations

Introduction

For most independent power producers in emerging markets, the power purchase agreement is the only contract under which the project company will earn revenues of any significance. As a result, if the PPA is terminated or otherwise becomes unenforceable, then the project company will not have any reliable source of revenues. In order to eliminate the uncertainty, investors and their lenders may require that an offtaker or host country agree in the PPA or in a separate agreement (such as a government support agreement, or a put and call option agreement) to purchase the power plant together with all of the associated facilities (or all of the outstanding shares in the project company) in the event that the PPA is terminated for reasons that are attributable to the offtaker or the host country (or certain other force majeure events).

The host country and the offtaker are exposed to a similar but opposing set of risks. In many countries, the offtaker may be short on capacity and energy and need the capacity of the power plant to keep the lights on. If a project company fails to properly perform its obligations under a PPA, then the offtaker and host country may require the right to purchase the power plant and all of the associated facilities (or all of the outstanding shares in the project company) in the event the PPA is terminated for reasons that are attributable to the project company or the sponsors (or certain force majeure events).

Put and Call Options

It is often convenient to discuss the rights and obligations of the offtaker, host government, project company, and sponsors following the termination of a PPA in terms of a **put option** and a **call option**. When viewed in this framework:

- A **put option** is a right held by the project company and the sponsors to require the offtaker or the host country to purchase either the power plant and associated facilities or the outstanding shares in the project company at a pre-agreed purchase price following certain well-defined **trigger events**; and
- A **call option** is a right held by the offtaker or the host country to require the project company or the sponsors to sell either the power plant and associated facilities or the outstanding shares in the project company to the offtaker or the host country at a pre-agreed purchase price following certain other well-defined trigger events.

The trigger events that would ordinarily lead to a right to exercise a call option or a put option appear in the illustration below.

Typical Trigger Events & Resulting Exercise Rights

Event	Offtaker Right to Purchase Plant or Shares ("Call Option")	Project Company Right to Require Purchase of Plant or Shares ("Put Option")
Offtaker Event of Default	*[Maybe]**	Yes
Project Company Event of Default occurring prior to COD	Yes	No
Project Company Event of Default occurring after COD	Yes	*[Maybe]**
Expropriation	*[Maybe]**	Yes
Prolonged Local Political FME	*[Maybe]**	Yes
Prolonged Local Political FME Affecting Project Company	Yes	*[Maybe]**
Prolonged Local Political FME Affecting Offtaker	Yes	Yes
Prolonged Natural FME Affecting Offtaker	*[Maybe]**	Yes
Prolonged Natural FME Affecting Project Company	Yes	*[Maybe]**
Prolonged Supply Constraint	Yes	*[Maybe]**

* *[Maybe]* reflects arguments over whether the party reponsible for termination should be able to purchase (or require the purchase of) the plant or shares

Purchase Prices

The purchase prices should vary depending on the trigger event. In order to provide the proper incentives to all parties, it is appropriate to divide the trigger events into the following three categories:

- **Offtaker Attributable:** Trigger events that are attributable to the offtaker or the host country result in the payment of the highest purchase price, which is sometimes referred to as Offtaker Default Purchase Price.

- **Producer Attributable:** Trigger events that are attributable to the project company or the sponsors result in the payment of the lowest purchase price, which is sometimes referred to as the Project Company Default Purchase Price.
- **No Attribution:** Trigger events that are attributable to neither party result in the payment of a purchase price that is in between the offtaker default purchase price and the project company default purchase price. This mid-point purchase price is sometimes referred to as the Natural Force Majeure Purchase Price.

Although a wide variety of methods can be used to calculate the purchase prices, some fundamental building blocks are commonly used. These building blocks are shown in the two sample methodologies for calculating purchase prices in the illustrations below. In these illustrations, the variables shown in black constitute a common core of variables that appear in all of the purchase prices. Variables that appear in blue may or may not appear in the formula depending on the purchase price. Variables that appear in red are alternative methods for calculating one of the variables. It should be stressed that these are simply examples as to how purchase prices can be calculated.

The illustration shows the typical trigger events, the rights that typically arise out of the trigger events, and the purchase price that would typically be payable following the exercise of the call option or put option.

Trigger Events

The illustration that appears below shows an example of how purchase prices can be calculated.

Pre-COD Project Company Default Purchase Price =	DO + TC – IP – EP – ER – DM - **USC**
Post-COD Project Company Default Purchase Price =	DO + TC – IP – EP – ER – DM
Offtaker Default Purchase Price =	DO + TC – IP – EP – ER – DM + **SCO** + **PTRSCO**
Natural Force Majeure Purchase Price =	DO + TC – IP – EP – ER – DM + **SCO**

Variable	Meaning
DO	Debt outstanding* plus hedge break costs
TC	Termination costs *(taxes arising out of transfer, cost to terminate other project agreements)*
IP	Insurance proceeds
EP	Expropriation proceeds *(proceeds from remedies for expropriation under applicable law)*
ER	Environmental remediation *(the cost of bringing the facility into the condition required under the PPA)*
DM	Deferred maintenance remediation *(the cost of bringing the plant to the condition in which the PPA requires the Project Company to maintain it, as determined by an independent engineer)*
USC	**Un-contributed equity commitments that should already have been contributed**
SCO	**Shareholder contributions outstanding** ***(assuming equity is redeemed on a straight-line basis)***
PTRSCO	**Post termination return on shareholder contributions outstanding** ***(a return of X% on outstanding equity for a period equal to the lesser of (i) [18 months – 3 years], and (ii) remainder of term)***

**Negotiated:* Offtaker will want outstanding principal specified in a schedule, with DO capped at the amount set forth in the schedule plus any debt outstanding that may be outstanding as a result of the relevant termination event; Lenders will want all outstanding debt to be included.

The illustration that appears below shows another example of how purchase prices can be calculated.

Pre-COD Project Company Default Purchase Price =	DO + TC – IP – EP – ER – DM - **USC**
Post-COD Project Company Default Purchase Price =	DO + TC – IP – EP – ER – DM
Offtaker Default Purchase Price =	DO + TC – IP – EP – ER – DM + **SCO** + DFD
Natural Force Majeure Purchase Price =	DO + TC – IP – EP – ER – DM + **SCO**

Variable	Meaning
DO	Debt outstanding* plus hedge break costs
TC	Termination costs *(taxes arising out of transfer, cost to terminate other project agreements)*
IP	Insurance proceeds
EP	Expropriation proceeds *(proceeds from remedies for expropriation under applicable law)*
ER	Environmental remediation *(the cost of bringing the facility into the condition required under the PPA)*
DM	Deferred maintenance remediation *(the cost of bringing the plant to the condition in which the PPA requires the Project Company to maintain it, as determined by an independent engineer)*
USC	**Un-contributed equity commitments that should already have been contributed**
SCO	**Shareholder contributions outstanding** ***(assuming equity is redeemed on a straight-line basis)***
DFD	**Discounted future distributions** ***(future dividends and redemption payments for the full term of the PPA, discounted to NPV at equity IRR)***

**Negotiated:* Offtaker will want outstanding principal specified in a schedule, with DO capped at the amount set forth in the schedule plus any debt outstanding that may be outstanding as a result of the relevant termination event; Lenders will want all outstanding debt to be included.

Non-default Events

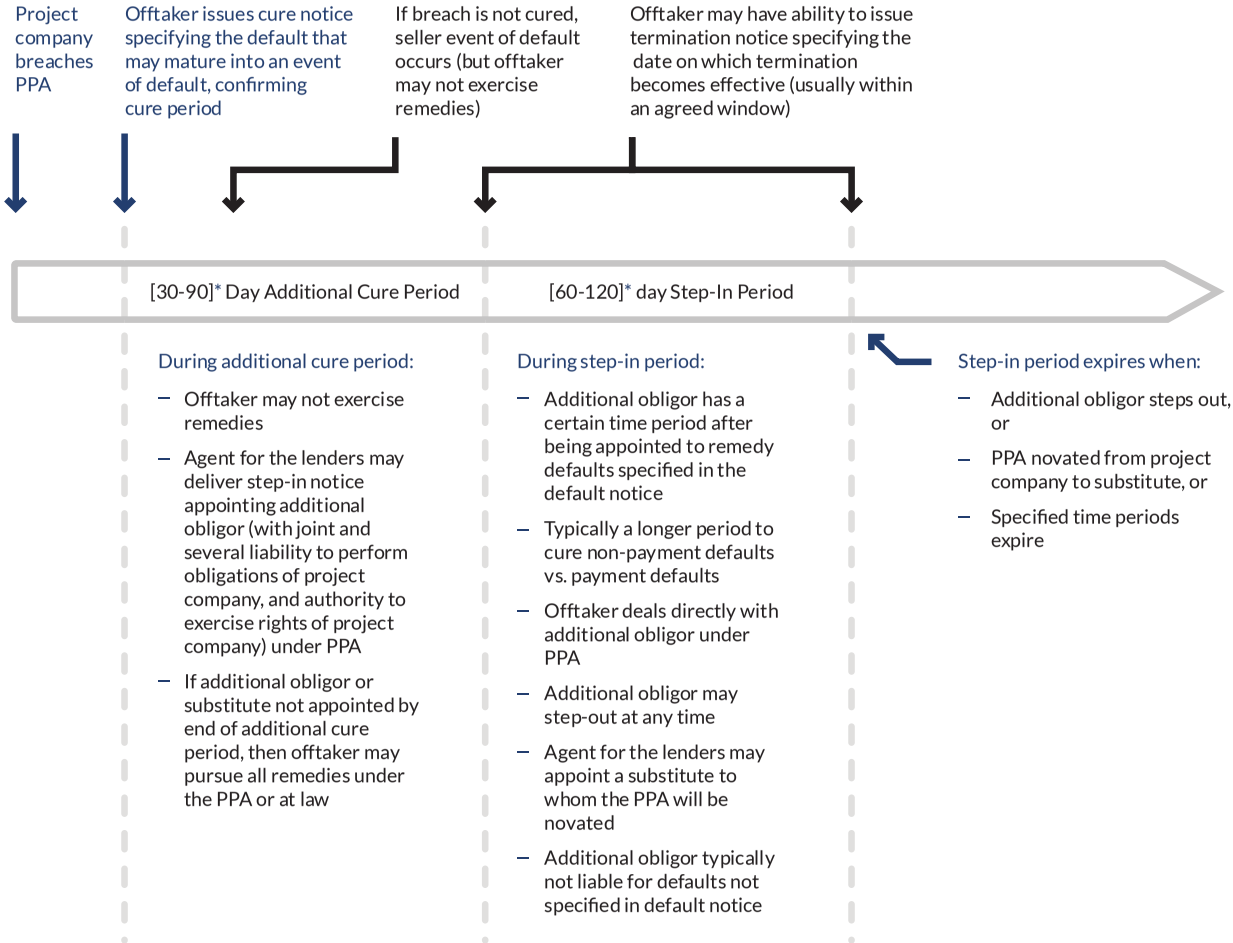
Either the buyer or the seller shall have the right to terminate the PPA where, through no fault of either party, performance of the PPA is rendered impossible. This consists mainly of force majeure events (including both political and non-political force majeure events) which persist for a prolonged period of time, with the effect of rendering performance of obligations by one or more parties under the PPA impossible.

Offtaker may Terminate Following	Project Company May Terminate Following
Prolonged Natural Force Majeure Events	Prolonged Natural Force Majeure Events
Prolonged Foreign Political Force Majeure Events	Prolonged Foreign Political Force Majeure Events
Prolonged Local Political FME if: 1. Local Political FME renders continued performance or restoration unlawful or impractical; 2. Restoration costs exceed threshold; 3. Efforts to finance restoration fail	Prolonged Local Political FME if: 1. Local Political FME renders continued performance or restoration unlawful or impractical and offtaker elects not to continue paying capacity payments; 2. Restoration costs exceed threshold; 3. Efforts to finance restoration fail
Prolonged fuel constraints following use of reasonable efforts to arrange alternative supply (depends on technology)	

Lender Rights

Lenders are concerned that the project company may fail to comply with its obligations under the PPA, since this can result in the offtaker having the right to terminate the PPA - and, ultimately, jeopardise the ability of the project company to repay the lenders. Therefore, in a typical project, lenders will require notice of any default, certain minimum cure periods, and step-in rights to cure defaults directly. These matters will often be dealt with in direct agreements (see below).

Lenders may request equivalent provisions - notices, cure periods, step-in rights - for other key project documents, but the concern is most significant for the PPA, since the PPA is the revenue-producing contract.



* The number of days is indicative and should be negotiated between the parties

Notice and Cure Periods

The PPA itself contains certain cure periods for defaults by the project company. These are the amounts of time the project company has to cure a particular default before the offtaker can exercise remedies. Lenders may request longer cure periods than those agreed between the project company and the offtaker. Lenders also want direct notice of these defaults. If the lenders do not exercise their right to cure during this additional cure period, then the offtaker can exercise its remedies under the PPA.

Typically, offtakers are willing to agree to these provisions at the request of lenders, to some extent. If lenders are willing to cure defaults, this can benefit the offtaker. However, offtakers are concerned that lengthening cure periods will make it more difficult for them to exercise their remedies. The specific length of the additional cure periods is negotiated.

Step-in Rights

For more significant events of default by the project company, it may be necessary for the lenders to **step-in** to the rights and obligations of the project company in order to cure. For example, if the project company breaches an obligation under the PPA that could allow the offtaker to terminate, then the lenders will require the right to step in and cure the breach, in order to avoid termination. Importantly, lenders also want the right to **step out** - to be able to no longer have the obligations of the project company after curing the breach.

As with notice and cure periods, offtakers are generally willing to agree to step-in rights for the lenders, but they do not want the length of the step-in period to be as long as the lenders typically would want. The lenders' argument is that the decision to step in and assume the rights and obligations of the project company requires deliberation - particularly if the lending group is relatively large, and requires a vote to direct the lenders' agent to step in. On the other side, the offtaker does not want long delays in its

ability to exercise remedies against a project company that is breaching its obligations under the PPA.

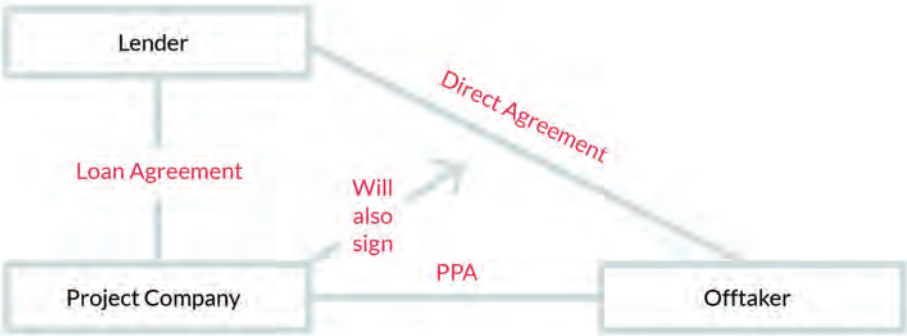
Novation/Substitution

A third scenario is where the project company may be unable to continue to operate the project. The lenders will want the right to transfer all of the project company's rights and obligations to a substitute entity, in which case the substitute entity, for the purposes of the project, takes over the project company's role and the project company is removed from the project. The PPA (and other key project documents) will need to provide for transfer or be renegotiated before the lenders can successfully transfer the project to the substitute entity. This transfer is generally referred to as a novation of the PPA. The offtaker (and other key contract counterparties) may want the right to approve the substitute entity, although the lenders will be concerned that requiring such approvals could delay the process.

Direct Agreements

Certain provisions above may be contained directly in the PPA (whether in the original PPA or an amendment), but ultimately, all parties should expect that the lenders will require a direct agreement between the lenders and the offtaker that will cover the above provisions and other lender concerns. The project company would usually also be a party to the direct agreement, since the direct agreement will typically set forth certain amendments or modifications to the PPA.

How Direct Agreements Fit In



The fundamental purpose of the direct agreement for a PPA is to create a direct relationship between the lenders and the offtaker.

First, the offtaker needs to know that the lenders exist.

Second, the PPA itself may restrict the project company from assigning its rights and obligations under the PPA. Therefore, the direct agreement must provide that (i) the project may collaterally assign its interests to the lenders, and (ii) in exercising their remedies, the lenders may further novate the PPA to a substitute entity who assumes the rights and obligations of the project company as the seller under the PPA.

Third, the direct agreement should be expected to include the provisions described above - notices to lenders, extended cure periods, step-in rights, and the right to novate the PPA to a substitute entity - to the extent not already sufficiently covered in the PPA.

Fourth, the direct agreement may contain substantive amendments to the PPA, to address lender concerns that the initial PPA did not address to the

lenders' satisfaction. These provisions may do everything from modifying fundamental commercial issues - such as extending the term of the PPA, or adjusting payment provisions - to fixing small typos.

Direct agreements are similarly used between the lenders and the other major project participants. For each project contract, there may be specific considerations to be addressed. Provisions that may be relevant for direct agreements in other project contracts, but typically not the PPA, include, amongst many other things: licensing rights, land issues, and the supply of spare parts or raw materials.

Summary of Key Points

Events of Default

- **Buyer Events of Default**: Events of default attributable to the buyer's obligations, such as the failure to pay and failure to achieve buyer's construction milestons, will be categorized as Buyer Events of Default. This category may also include events outside the Buyer's control, such as a change in law.
- **Seller Events of Default**: Events of default attributable to the seller's obligations, such as failure to complete construction or failure to operate the plant properly, will be categorized as Seller Events of Default. Unlike with Buyer Events of Default, this category is strictly limited to events entirely within the control of the seller.
- **Non-Default Events**: Events outside the control of either party may render the PPA impossible to perform. This category typically includes force majeure events but may also be negotiated to include other events, such as prolonged fuel constraints.

Lender Rights

- **Step-In Rights**: Lenders will require the right to step in and cure the breach of the seller in order to avoid termination of the PPA.
- **Novation/Substitution**: If the lender is unable to cure the breach through its exercise of step-in rights, then the lender may seek to novate the contract to an entirely new seller to resume operation of the project and avoid termination of the PPA.
- **Direct Agreement**: The lenders step-in and novation rights will typically be included in a direct agreement between the lender and the offtaker.

Post-Termination Remedies

- **Put and Call Option**: The buyer has the obligation to purchase the ownership interest of the seller or the power plant and pay off any outstanding loans to lenders based on terms stipulated in the Put and Call Agreement in the event of a termination of the PPA.
- **Purchase Price**: The purhcase price will depend on the type of event that triggers termination (Offtaker, Producer, No Attribution). There are a number of different methods for calculating the price.

Appendix

Glossary

Acronyms

Other Resources

Glossary

Arbitration - a dispute resolution mechanism where the matter in dispute is referred for determination by an arbitral panel in accordance with a pre-agreed set of rules.

Assignment - a legal term describing the act of transferring the rights, but not obligations, of a party under an agreement to another party. The right of a party to assign its rights under an agreement will be subjected to restrictions and limitations set out in the relevant agreement and may require the prior consent of other parties to the agreement.

Back to Back - mirrored contract provisions in different contracts to pass risk to another party. More precisely, in relation to an obligation, means the ability of the obligor to pass on the risk of such obligation to another party. This is normally achieved through third party contracts.

Baseload Power or Capacity - generating capacity within a national or regional grid network that the offtaker or grid operator intends to dispatch or utilise on a continuous basis.

Capacity Payment - a payment for capacity by the offtaker which is based on the ability of the power plant to generate a certain amount. The payment is designed to allow the producer to recover their fixed costs (capital costs and fixed operating costs) and agreed-upon profits. These charges are paid so long as the power plant is made available or deemed available for dispatch, regardless of whether the power plant is actually dispatched.

Carry Forward - an amount of entitlement that is not immediately utilised by the party so entitled, which is added to the entitlement of the party in the next period of entitlement.

Collateral - property, contract rights, or other assets in which a borrower grants a security interest to a lender in order to secure the repayment of a loan.

Commercial Operations Date or **COD** - a key milestone date defined in the PPA when the power plant commences commercial operation.

Concentrated Solar Power or **CSP** - a form of solar power generation whereby a circular arrangement of solar panels is focused onto a water tower to create steam to enable generation of electricity through a steam turbine.

Concession - the right granted by the host government to build and operate the power plant and sell electricity in the host country for a number of years. A concession agreement is the agreement by which the concession is granted to the project company. An implementation agreement serves a similar purpose.

Conditions Precedent - a set of conditions that must be fulfilled before a contract or parts of it become effective.

Consequential Loss - please refer to the definition of Direct Loss.

Contingent Liability - a liability that has not yet materialised but which may materialise in the future.

Corporate Finance - used to distinguish Project Finance (see below). Corporate finance implies that the lender has recourse to the shareholders of the relevant borrower and/or to assets over and above the asset being financed.

Cure Period - the time period during which a defaulting party has a chance to correct a breach which would otherise lead to an event of default.

Curtailment - an instruction by the offtaker or grid operator to the power producer of a non-dispatchable power plant to reduce generation. This may be motivated by end-user demand, the availability of alternative generation resources, transmission network capacity and/or grid stability.

Debt Service Reserve Account or **DSRA** - in the context of the loan agreement, a special debt reserve account denominated in the currency of the loan, which the project borrower funds with available project cashflow, up to an amount that is sufficient to cover the scheduled debt service obligations of the project borrower over an agreed period of time.

Decommissioning - the obligation of the project company to dismantle the power plant and clean up the project site upon the expiry of the term of the concession.

Deemed Capacity - the capacity that a power plant would have been able to make available, but for the occurrence of an event or circumstance for which the offtaker bears the risk.

Deemed Completion - the date on which a power plant would, but for the occurrence of an event for which the offtaker bears the risk, have achieved the COD.

Deemed Generation- the electricity that a power plant would have been able to generate, but for the occurrence of an event or circumstance for which the offtaker bears the risk.

Delivery Point - the point to which a producer is responsible for delivering electricity generated by the power plant. The delivery point is typically on the high voltage side of the step-up transformers. The electricity that is generated by a power plant is measured at the delivery point.

Developer - see **Sponsor**.

Development Finance Institutions - financial institutions with a mandate to finance projects that achieve development outcomes. Examples include the World Bank, AfDB, OPIC, FMO, DEG, CDC, DBSA and Proparco.

Direct Agreements - contracts or agreements between lenders and counterparties of the project company (including the offtaker and, where rele-

vant, the host government), under which the relevant project counterparty acknowledge the security interests granted by the project company to the lenders, and allows lenders the opportunity to step in to remedy breaches by the project company. Direct Agreements may also be used to clarify/amend the underlying project contract.

Direct Loss - a loss arising directly as a result of a defaulting party's failure to perform its obligations under the agreement.

Dispatch - an instruction by the offtaker or grid operator to the power plant to produce electricity.

Dispatchable Plant - a power plant that is capable of responding to the instructions of the transmission company on demand to vary its output on short notice. Plants that fall within this category include coal-fired plants, gas-fired plants, and renewable plants with a relatively constant or storable source of energy such as a hydro plant with reservoir and/or a biomass plant.

Drawdown - in the context of a loan, means the advance of funds from the lender to the borrower.

Effective Date - the date on which the PPA comes into effect. The conditions to the effective date will vary from project to project, but will often include financial close.

Energy Payment - a payment for electricity by the offtaker which is based on the actual amount of power generated and dispatched. The payment is designed to allow the producer to recover fuel costs and variable operating costs.

Engineering, Procurement and Construction Contract or **EPC Contract** - one or more contracts to be entered into between the EPC contractor and the project company for the purpose of setting out terms and conditions for the design, engineering, procurement of materials and equipment, the construction and commissioning of the power plant.

Equator Principles - risk management framework adopted by financial institutions for determining, assessing and managing environmental and social risk in projects, primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

Equity - money invested by the sponsors in the project that is not borrowed by the project company. The term "Equity" may sometimes be used to include shareholder subordinated debt (which is finance made available to the project company by the sponors or shareholders of the project company, which is subordinated to debt made available by the lenders).

Equity Contribution Agreement - obliges the owners of the power plant to make equity or subordinated debt contributions to finance the portion of the power plant not being financed by third party lenders.

Event of Default - a default that the parties to a contract agree is a material default. The occurrence of an Event of Default usually grants the non-defaulting party the right to terminate the contract if such default is not cured within any applicable cure period.

Feasibility Study - a technical and financial study of the viability of the proposed power project.

Financial Closing - either (i) the execution of the Financing Documents, or (ii) the execution of the Financing Documents and the satisfaction of all of the conditions for disbursement of the project loans.

Financing Documents - the set of contracts and agreements other than the project documents (including the Loan Agreements Direct Agreements and Security Agreements), that define the rights and obligations of the lenders and the project company in relation to the financing of the power plant.

Force Majeure Event - an event beyond the control of the affected party that prevents it from performing one or more of its obligations under the relevant contract. Events constituting force majeure are generally further

classified into Political Force Majeure Events and Non-Political Force Majeure Events, with different financial and contractual consequences to the contracting parties. Natural Force Majeure falls within the latter category.

Fuel Supplier - a supplier of fuel used to generate electricity.

Fuel Supply Agreement - the agreement between the project company and the fuel supplier (in the case of a conventional PPA), or between the offtaker and the fuel supplier (in the case of a tolling agreement or energy conversion agreement), under which the fuel supplier supplies fuel to the project company.

Fuel Transportation Agreement - an agreement providing for the transportation of fuel from the fuel supplier to the project company.

Generator - see **Seller**.

Grid - a system of high tension cables by which electrical power is distributed throughout a region.

Heat Rate - a measurement of the efficiency of a power plant in converting a unit of fuel into a unit of energy. Heat rates are typically described in terms of MMBtu (LHV) per kWh or GJ(LHV)/kWh.

Host Government - the government of the country in which the power plant is located.

IFC Performance Standards - a set of standards developed by the IFC that are designed to help identify, avoid, mitigate, and manage any adverse social or environmental impacts that may be created by a power project.

Independent Power Producer - a privately-owned producer of electric power.

Insolvency - the inability of an entity to pay its debts when or as they become due.

Interconnection - the point at which the transmission system and the power plant interconnect.

Interconnection Agreement - an agreement between the project company and the transmission system operator providing for the connecting of the power plant to the transmission system.

Internal Rate of Return or **IRR** – the annualised effective compounded rate of return earned on an investment over a period of time.

Investor - see **Sponsor**.

Kilowatt Hour - a measurement of energy which is equal to 1,000 watts of electricity being generated or consumed continuously for a period of one hour.

Lenders - the providers of loan financing to the project company.

Liquidated Damages - a contractually agreed, fixed amount of damages to compensate one party to a contract for a breach by the other party.

Liquidity - the availability of cash and cash equivalents to cover a party's short-term financial obligations.

Loan Agreement - creates the commitment of the lender to make a loan to the producer to finance the power project, and the obligations of the producer/borrower to repay the loan with interest and to comply with various covenants set forth in the loan agreement.

Long-Stop Date - the final deadline for the achievement of a significant milestone in a contract, such as the fulfilment of the conditions precedent to the parties' obligations under the agreement, the achievement of financial closing, or the achievement of the commercial operations date.

Long Term Service Agreement or **LTSA** - an agreement under which the equipment supplier will provide certain maintenance services on a

power plant at regular intervals during the term of a PPA and/or will provide certain spare parts that are necessary in order to operate and maintain the power plant.

Make-whole - the act of putting a party in the same position as if the event that caused a loss or reduction of benefit has not occurred.

Material Breach - a serious breach by a party of its obligations under an agreement.

Megawatt - a measurement of power meaning 1,000,000 watts.

Merchant Power Plant - a power plant that sells electricity to a competitive wholesale market instead of under a PPA. The offtake of electricity from a merchant power plant is governed by market forces, thereby exposing the project company to market risk.

Misrepresentation - a statement or representation made by one party to another which is proved to be untrue.

Net Electrical Output - the net electrical energy, typically expressed in MWh, that is generated by a power plant and delivered to the delivery point, as measured by the metering system located at the delivery point.

Non-dispatchable Plant - a power plant that is not capable of responding to instructions from a transmission system operator to vary its output.

Non-Political Force Majeure Events - a force majeure event that is not a Political Force Majeure Event.

Non-Recourse Financing - financing that will be repaid solely from an identified source of revenues. Non-recourse financing is usually provided to a special-purpose vehicle. The obligations of the shareholders in the special-purpose vehicle are usually limited to their obligation to contribute capital and, in some cases, to provide other limited and well-defined support to the special-purpose vehicle.

Novation - a legal mechanism by which the rights and obligations of a party under a contract are transferred to third party.

Offtaker - the party to a PPA whose obligation is to purchase the capacity made available and the electricity generated by the power plant, subject to the terms and conditions of the PPA. Also referred to as the Buyer.

Operating and Maintenance Agreement or **O&M Agreement** - the agreement between the project company and the operator under which the operator operates and maintains the power plant.

Pass Through - in relation to a cost, a mechanism under which the producer passes such cost on to the offtaker by operation of the tariff.

Political Force Majeure Event - a force majeure event that is political in nature. Typically these would include any act of war, conflict, act of foreign enemy, blockade, embargo, or revolution, strikes of a nationwide or politically motivated character, changes in law, and the revocation or non-issuance of concessions or other authorizations.

Power Purchase Agreement or **PPA** - a contract between two parties, one of which produces or generates power for sale (the seller/producer) and one of which purchases power (the buyer/offtaker). This contract is sometimes referred to as an "offtake" agreement.

Producer - see **Seller**.

Project Company - See **Seller**.

Project Documents - the contracts or agreements required for the construction, operation and maintenance of the power plant. Typically this will include the Power Purchase Agreement, the EPC Contract, Fuel Supply Agreement, Operations and Maintenance Agreement, and the Interconnection Agreement.

Project Finance - see Non-Recourse Financing.

Project Loan - a loan from one or more lenders to the project company, made for the purpose of financing a power project.

Project Works - the civil works and electro-mechanical equipment that will, once completed, constitute a power plant.

Public Private Partnerships - arrangements between the public and private sectors whereby a service or piece of infrastructure that is ordinarily provided by the public sector is provided by the private sector, with clear agreement on the allocation of associated risks and responsibilities.

Regulator - competent authority of the host government having the statutory right to regulate the Project and the project company.

Request For Proposal - an invitation from the host government, the off-taker, or in some markets, the Regulator, to potential investors to submit a proposal to develop a power project.

Run of the River - in the context of a hydroelectric plant, a hydroelectric plant without a reservoir of any significant size.

Security Documents - the documents that grant the security interests, mortgages, pledges and other security rights that secure the repayment of the project loans in favor of the lenders.

Seller - The entity which is selling power under the PPA. Also referred to as the **Project Company**, **Power Producer** or **Generator**.

Several Liability - means that each party is separately responsible for its own performance and the consequences of its failure to perform.

Site - the land upon which the power plant is located.

Sovereign Support Agreements - can include sovereign guarantees, comfort letters, put and call option agreements and other forms of

sovereign support that enhance the creditworthiness of the offtaker and other government entities involved in the project.

Special-Purpose Vehicle - a corporate entity established specifically for the purpose of pursing a specific project which is prohibited from undertaking any activity beyond the project in question. Often called the project company for the purposes of this handbook.

Sponsor - a shareholder or other parties affiliated with the shareholders of the project company, also known as the **Investor** or **Developer** in this handbook.

Spot Market - in the context of the supply of electricity, the wholesale electricity market into which the project company can sell electricity other than under a long-term PPA. In the context of a fuel supply arrangement, the market from which the project company can acquire fuel without entering into long-term fuel purchase obligations.

Step-in Rights - the rights granted to the lenders under a Direct Agreement to step-in and cure a default by the project company, under a project agreement, before the counterparty to the project company may take any action to enforce the contract against the counterparty or terminate the contract.

Take and Pay - in the context of a PPA, the obligation of the offtaker to accept delivery of and pay for electricity actually generated by the power plant.

Take or Pay - in the context of a PPA, the obligation of the offtaker to pay for electricity made available by the power plant regardless of whether the electricity is actually generated, but excluding electricity that is dispatched by the transmission system operator but not delivered by the producer.

Term - the period of time during which a contract will remain in force, unless terminated earlier by either party in accordance with the terms and

conditions of the contract. The term of a PPA is usually expressed to run until a date falling a fixed number of years after COD.

Tolling Agreement - in the context of power projects, an agreement under which a party, usually the offtaker, agrees to provide fuel to the power producer that will be converted into electricity for the benefit of the offtaker.

Volts - a derived unit for electrical potential.

Acronyms

AfDB - African Development Bank

BOO - Build Own Operate

BOOT - Build Own Operate Transfer

BOT - Build Operate Transfer

COD - Commercial Operations Date

CP - Conditions Precedent

CSA - Credit Support Agreement

CSP - Concentrated Solar Power

DBA - Design Build Agreement

DFI - Development Finance Institutions

DSCR - Debt Service Coverage Ratio

DSRA - Debt Service Reserve Account

EBRD - European Bank for Reconstruction and Development

ECA - Export Credit Agency

EIA - Environmental Impact Assessment

EIS - Environmental Impact Statement

ESIA - Environmental and Social Impact Assessment

EPC - Engineering, Procurement and Construction (contract)

EPCM - Engineering, Procurement, Construction, Management

EURIBOR – Euro Interbank Offered Rate

FM - Force Majeure

FME – Force Majeure Event

FMV - Fair Market Value

FSA - Fuel Supply Agreement

GJ - Gigajoule

IA - Implementation Agreement

ICA - Infrastructure Consortium for Africa

ICC - International Chamber of Commerce

ICSID - International Centre for Settlement of Investment Disputes

IDC - Interest During Construction

IE - Independent Engineer

IFC - International Finance Corporation

IPP - Independent Power Producer/Project

kW - kilowatt

kWh - kilowatt hour

LD - Liquidated Damages

LHV – lower heating value

LIBOR - London Interbank Offered Rate

LC - Letter of Credit

LCIA - London Court of International Arbitration

LTSA - Long Term Service Agreement

MAE - Material Adverse Effect

MDB - Multilateral Development Bank

MIGA - Multilateral Investment Guarantee Agency

MMBtu - Million British Thermal Units

MW - Megawatt

MWh - Megawatt hour

O&M - Operations and Maintenance

OPIC- Overseas Private Investment Corporation

PCOA - Put and Call Option Agreement

POD - Point of Delivery

PPA - Power Purchase Agreement

PPP - Public Private Partnership

PRG - Partial Risk Guarantee

PRI - Political Risk Insurance

PV - Photovoltaic

PQ - Pre-Qualification

RFP - Request for Proposal

SOE - State Owned Entity

SPV - Special Purpose Vehicle

T-Line - Transmission Line

UNCITRAL - United Nations Commission on International Trade Law

VAT – Value Added Tax

WCLC – Working Capital Letters of Credit

Other Resources

The following is a non-exhaustive list of additional online resources:

Country Risk Classifications

- Standard & Poor's Country Risk Ratings: http://goo.gl/E8Ha4

Environment and Social

- African Development Bank's Integrated Safeguard System: http://goo.gl/hWTO5p
- Equator Principles: http://www.equator-principles.com
- IFC Environmental and Social Performance Standards: http://goo.gl/pNaCOv

Development Finance Institutions

- Africa Finance Corporation: http://www.africafc.org
- African Development Bank Group: http://www.afdb.org
- Asian Development Bank: http://www.adb.org
- DEG German Investment Company: http://www.deginvest.de
- Development Bank of Southern Africa: http://www.dbsa.org
- European Bank for Reconstruction and Development: http://www.ebrd.com
- European Investment Bank: http://www.eib.org
- FMO Netherlands Development Finance Company: http://www.fmo.nl
- International Finance Corporation: http://www.ifc.org
- Islamic Development Bank: http://www.isdb.org
- Proparco Investment and Promotions Company for Economic Cooperation: http://www.proparco.fr
- Overseas Private Investment Corporation: http://www.opic.gov
- World Bank Group: http://www.worldbank.org

Negotiation Support

- African Legal Support Facility: http://goo.gl/hux9Va
- Host Government Negotiation Support Portal: http://www.negotiationsupport.org

Power Sector Guides

- Africa Power Guide: http://www.africapowerguide.com
- Geothermal Handbook: Planning and Financing Power Generation by World Bank: http://goo.gl/Ftms70
- IEA Wind Power Technology Roadmap: http://goo.gl/5uaStk
- Important Features of Bankable Power Purchase Agreements by OPIC: http://goo.gl/fBRXys
- Power Africa: http://www.usaid.gov/powerafrica
- World Energy Outook 2014: http://www.worldenergyoutlook.org
- Eberhard, A. and Gratwick, K. N, *Demise of the Standard Model for Power Sector Reform and the Emergence of Hybrid Power Markets*, Energy Policy Volume 36, Issue 10. 2008. http://goo.gl/7y4076

Procurement

- EIB Procurement Guidelines: http://www.eib.org/infocentre/publications/all/guide-to-procurement.htm
- South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lessons: http://goo.gl/1YnSGy
- World Bank Procurement Guidelines: http://www.worldbank.org/procurement

Project Finance

- World Bank: Project Finance and Guarantee Notes: http://goo.gl/rdCkTH
- World Bank: Partial Risk Guarantees: http://goo.gl/7z6ZQo

Project Preparation

- ICA Assessment of Project Preparation Facilities for Africa: http://goo.gl/MfLS92

Public Private Partnerships

- Infrastructure Consortium for Africa: http://www.icafrica.org
- Unsolicited Proposals - An Exception to Public Initiation of Infrastructure PPPs: http://goo.gl/hXJgFZ
- World Bank Public Private Partnership in Infrastructure Resource Center: http://www.worldbank.org/pppirc

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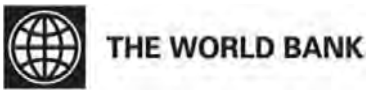
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