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Introduction to Power Station Project Financing

Stephen Peppiatt

Shortage of electricity is an impediment to economic growth in the developing countries of the Far East and Pacific Rim. To build the required Power Stations, local governments depend upon the capital and expertise of foreign developers. This article is an introduction to Power Station Financing with a particular focus on the specific issues that an Independent Power Project will confront in developing countries.

The article is divided into four parts. Part I introduces the subject. Part II describes the players, structures and agreements involved in such a project. Part III provides a general description of a Power Station and the logistics of its operation. Part IV identifies the possible risks and risk allocation problems associated with Power Station Projects and suggests ways of addressing these issues.

I.
INTRODUCTION

Power generation is a growth area, particularly in the developing countries of the Far East and Pacific Rim, where the pace of economic expansion is being slowed by a shortage of available electricity. Often, local governments do not have the necessary capital to build required Power Stations and, therefore, look to foreign developers to provide financing and expertise.

This article is an introduction to Independent Power Project (IPP) Financing, with particular reference to the issues that might arise in a developing country.[1] The uncertain attitude of investors and lenders to projects in developing countries changes quite quickly, as projects are successfully completed and the perceived risks (particularly country-specific risks) do not eventuate. Investors and lenders may be further reassured by the fact that external support and certain allocations of risk that are fundamental (or perceived to be so) for the success of the first couple of projects in a country will probably become superfluous over time.

Developed countries (such as the United States and the United Kingdom), unlike undeveloped ones, have been able to identify and devise workable alloca-

1. Throughout the article the author gives examples of ways of structuring a power station project and of how various issues could be or have been addressed. Many of these are taken from specific transactions in which his firm has been involved, and all are derived from the author's extensive knowledge of project finance generally, and power station projects specifically.

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tions of the risks[2] involved in an IPP. In addition, the general structure has been agreed to and a history of political and economic stability precludes the need for extensive (or any) levels of support.[3]

This article provides an overview of the Independent Power Project by outlining the steps by which power plant projects may be financed. Section II of the article looks at the players, structure and agreements and Section III contains a very brief summary of Power Station financing and operation. It is assumed that some will read this article with little or no background knowledge of power stations and project financing; thus, Sections II and III are intended to provide some very basic facts. Section IV examines the risks and possible risk allocations.

The article seeks to identify the key issues of IPP financing: what are the respective parties' interests; what are the practical constraints on the structure of the project; what are the principal risk allocation problems, and how can they be approached; when and how is Force Majeure relevant and how can it be addressed; where is industry-specific knowledge needed; and how do industry-specific issues impact on the structure of an Independent Power Project.

II.
THE PLAYERS, THE STRUCTURE AND THE AGREEMENTS

A. The Players

The success of any project depends upon the interrelations between certain key players who establish the foundation of the project. These principal parties are broadly identified for the purpose of this article as the Project company, the Shareholder, the Operator, the Power Purchaser, the Lenders, the Contractor, the Fuel Supplier, and the Local Government. At the core of the project financing structure is the Project Company with whom all the other parties form contractual relations. The Project Company will usually be a special purpose vehicle company (i.e. one whose only activity will be the construction and operation of the project) set up in the country in which the power station will be constructed. The Shareholders in the Project Company may include the Contractor (who will build the Power Station), the Operator (who will operate it once completed), a local partner or partners, and the Power Purchaser (either the local electricity board or a large local business who agrees to buy the generating capacity of and electricity from the completed Power Station).

Financing is an important aspect in developing a power plant. In order to obtain the necessary financing, the Project Company will enter agreements with various Lenders. These Lenders may include bilateral and multilateral lending

2. The 'risks' associated with an IPP are those such as Force Majeure (which refers to events outside the control of the contracting party. *See infra.* Part IV (A)), and project risks such as defaults and delays.

3. 'Support' in this context refers to the external support and aid that might be provided to the project by the local government. *See infra.* Part II (C).

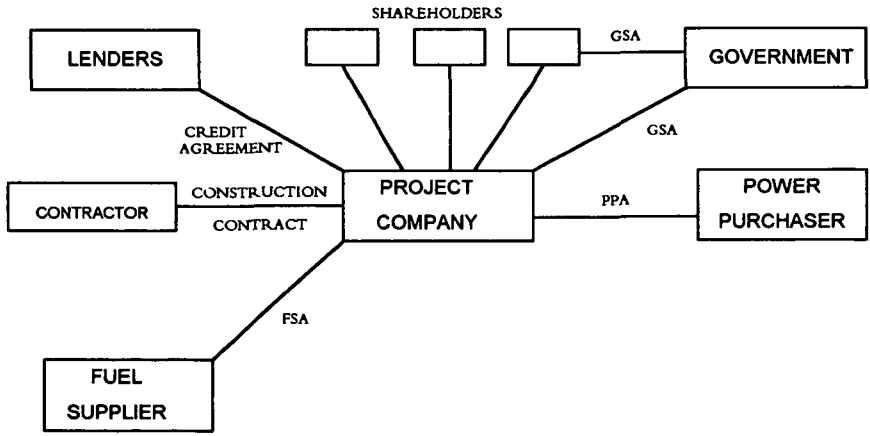
agencies, export credit agencies and commercial banks, both international and domestic.

Another important consideration in the completion of power plant projects, especially in undeveloped countries, is the approval of the Host Government, which in most cases will be required to provide some form of support (at the local or national level, or both) to the project company and possibly to the Shareholders and Lenders. Although the type of governmental support will depend on the particular project, governmental support may take the form of currency exchange guarantees, exemptions from taxes, etc. (See Government Support Agreement below).

The Project Company must also concern itself with the operation of the Power Station, an integral element of which is acquiring adequate fuel supply for the Station. To this end, the Project Company may make various types of arrangements with the Power Purchaser. For example, unless the Project Company is certain that there will be sufficient fuel for the Power Station on a "spot" basis (i.e. buying fuel in the market as and when required) for the term of the Power Purchase Agreement, it will contract with a Fuel Supplier for a guaranteed supply. An alternative is a "tolling" arrangement which places the responsibility for fuel procurement on the Power Purchaser who will be primarily responsible for obtaining and delivering the fuel to the Power Station and for settling payment.

B. The Structure

THE STRUCTURE OF AN IPP



1. Financial Close

The structure above will be completed only after all the conditions precedent to the project agreements have been satisfied. Often this is only achieved

when the conditions precedent to the Credit Agreement are satisfied. In addition, many of the other project agreements are also contingent upon the successful execution of the Credit Agreement. Conditions precedent should, ideally, include everything necessary for the project to be satisfactorily completed, such as licenses, permits, agreements for any required infrastructure, acquisition of necessary land, etc..

C. The Agreements

As demonstrated by the structure of an IPP, different types of agreements with multiple and independent parties provide the cohesive force in a financing project. At the heart of any IPP is the Power Purchase Agreement (PPA), the document under which the Project Company will receive sufficient funds to service its debt and provide its equity return. Typically, the PPA will be for a term of twenty to twenty-five years from the commissioning of the Power Station (i.e. the date on which all the performance tests have been passed).

The Project Company will contract with the Contractor for the building of the Power Station under a Construction Contract (often called an engineering, procurement and construction contract (EPC)).

Apart from the physical construction of the power plant, the project company must also make arrangements for the operation of the plant. This includes providing for a fuel supply. There may or may not be a Fuel Supply Agreement (FSA). FSAs vary depending on the nature of the fuel consumed. Typical arrangements can obligate the Fuel Supplier to provide a minimum quantity of fuel, which can be an important guarantee to the project. In such agreements, the Project Company may also be obliged to take or pay for a certain amount (if the economics of the fuel production require a volume commitment to the Fuel Supplier). These may be supplemented by spot purchasing arrangements in certain cases. The extent to which reliance is placed on spot purchases, however, depends on the depth of supply and predictability of price in the relevant fuel market.

For the day-to-day running of the Power Station, the Project Company will typically contract with an Operator under an Operation and Maintenance Agreement (O&M Agreement). The Operator's responsibilities may also include management of the Project Company.

Other agreements fundamental to the IPP structure include the Shareholder Agreement, the Creditor Agreement and the Government Support Agreement. The Shareholder Agreement is an understanding between the shareholders covering matters such as maintenance of shareholdings and the timing of equity subscription. More complicated are the Credit agreement(s), which lay out the terms on which the lenders will make loans to the Project Company. Generally, the lenders and the other project creditors will take security over all the project company's assets. This includes, for example, the Power Station, the benefit of all the project contracts, and the insurance in the security documents.

It should also be noted that Intercreditor Arrangements are often highly complex, as different priorities may apply between different categories of Lenders and other creditors in different circumstances. For example, one set of Lenders might be paid second if insolvency resulted from a political act, but paid first if the insolvency resulted from operational failure, especially if these Lenders agreed to assume more political risk than the other lenders.

Lastly, the form of the Government Support Agreement (GSA), if any, will depend on the perceived country-specific political risks and may include provisions relating to the granting and maintenance of licenses, exemption from duties and exchange controls, disapplication of legislation, etc. In the Hub Rover Project in Pakistan, for example, the GSA (known there as the Implementation Agreement) contains assurances as to availability of foreign exchange, guarantees of payments, and general assistance to the Project during its development and construction to deal with investors' and lenders' concerns in these areas.

III.
POWER STATIONS

A. Power Stations

When constructing a Power Station, the parties to the agreements consider several basic factors such as the type of Power Station, the ultimate capacity of the station, and the ancillary services to be utilized.

Power Stations are generally categorized as base load, midmerit or peaking. A base load Power Station is intended to operate at almost full capacity most of the time. A peaking plant Power Station is available for generation on very short notice but is generally dispatched infrequently, only at times of maximum electricity requirements. Base load Power Stations tend to cost more to build per megawatt, but less to run, whereas peaking plants cost less to build but generate more expensive electricity. Peaking plants tend to be less efficient, leading to higher fuel costs and other variable costs. A midmerit Power Station lies between the two extremes. It is not unusual for plants that begin life as base load Power Stations to become midmerit Power Stations as they grow older.

The type of Power Station required will not only have an effect on the construction contract and the capital costs of the project but will also impact other areas, such as the fuel supply arrangements and the payment structure. Whatever the type of Power Station, various other ancillary services, particularly black start and/or frequency responsive generation, may be available and will need to be taken into account.

Black start capability is the ability of the Power Station to start up the whole power generation system, at a price, in the event of a shut down. This can be done by using a small diesel generator to start up a small turbine in the Power Station, which itself will generate electricity to start up the Power Station. The Power Station will, in turn, generate electricity to start up all the other Power Stations on the grid.

Frequency responsive generation is required to compensate for a drop in system frequency. If the frequency of the system drops, each Power Station connected to the system generates less electricity, causing a further drop in frequency and generation. Ultimately, the system shuts down. To avoid this, the system controller can either shed load by switching off consumers, or if available, can employ frequency responsive generation, whereby a Power Station will automatically increase its generation if the system frequency drops below a preset level, thus raising the frequency.

B. Payments

The financing of a power plant is regulated by agreement in the Power Purchaser Agreement. Normally, the power purchaser will agree in the PPA to pay both an Energy Charge and a Capacity Charge. The Energy Charge will cover the electricity generated by the Power Station and, broadly, the costs of generation. The Energy Charge will normally be designed to reflect short run marginal costs which are only incurred when the Power Station produces energy, such as variable O&M and fuel costs (either deemed, if the Project Company takes the fuel price risk, or actual, if the Project Company does not, subject to adjustment to reflect any heat rate guarantee (see below)). The Capacity Charge will pay for the Power Station's ability to generate electricity and covers the costs of building and the investors' return.

The Capacity Charge will generally be set at a level designed to recover fixed and long term variable costs such as debt service, fixed O&M costs and other fixed costs/charges and equity return.

It is also necessary to consider whether there will be any annual escalation of these charges and, if so, by what fixed or variable amount. Escalation of the Energy Charge will depend on who assumes the risk of increased generating costs. For example, the Project Company may agree to take limited fuel cost risk, by agreeing on a price for each unit of fuel which will increase annually. The rate of increase could be either an inflation index or a fixed amount (say 5%). Regarding the Capacity Charge, the Investors will need a certain amount to cover debt payments (both principal and interest) and will receive the excess as their return. If the Capacity Charge escalates, the value of the future income will be higher, and the starting point will be lower. On the other hand, a "levelized tariff" (i.e. one where the price is fixed throughout) will provide the Investors with more money earlier and allow for less later.

If there are "take" or "pay" provisions in the FSA with respect to a lack of dispatch by the system controller (i.e., if he does not call for the agreed minimum amount of electricity to be generated), the Energy Charge should be structured in such a way that the "take" or "pay" obligation under the FSA is passed through to the Power Purchaser. If, however, the reason that sufficient electricity has not been taken from the Power Station to pay for the minimum quantities

of fuel is that the Power Station has been unavailable for generation,[4] then either the generator may have to bear the cost or the cost may be attributable to Force Majeure, where the risk could fall on either party.

In addition, there can be charges for starts and ancillary services provided for system reasons.

C. *Capacity and the Consequences of Lack of Capacity*

A Power Station can achieve a nominal or nameplate capacity (e.g. "500 MW")—the number of megawatts the Station could generate assuming perfect construction of the Station, perfect ambient conditions and perfect performance. The relevance of nominal capacity will depend on the consequences of the Power Station failing to achieve that capacity when commissioned. Those consequences are areas where the interrelationship between a number of the project contracts (particularly the PPA, the Construction Contract and the Credit Agreement) must be carefully considered. The Project Company will expect liquidated damages from the Contractor; how those damages are applied will be influenced by, *inter alia*, the impact of the shortfall in capacity on the capacity payments. For example, if the capacity payments are calculated by reference to the tested capacity, as opposed to the nominal capacity, the Project Company's income stream will be reduced, possibly prejudicing the Project Company's ability to meet financial ratios imposed by the Lenders, and certainly reducing the Investors' returns. In those circumstances, the Lenders may want all or some of the damages applied towards reducing the outstanding debt. If this does not result in the Investors' returns being restored, the Investors may desire compensation for the reduced return. The Power Purchaser may feel that the reduction in capacity payments is sufficient. However, if there is no reduction in capacity payments, or if the reduction is deemed insufficient, the Power Purchaser may also seek a share of the damages, in addition to compensation for amounts spent on interconnection and transmission facilities related to the project.

D. *Heat Rate*

The Project Company will probably be required to guarantee a specified heat rate (particularly if fuel costs are passed through to the Power Purchaser). The heat rate is the efficiency at which the Power Station burns fuel (the lower the heat rate the better) and is the amount of fuel (whether coal, gas, oil or otherwise) expressed as a number of British Thermal Units (BTU's) or kilocalories required to produce 'x' units of electricity. The heat rate could be guaranteed by agreement before construction starts, or simply be the figure achieved in the commissioning tests, perhaps with an uplift to allow for degradation. The amount of the energy charge would be calculated by reference to the guaranteed

4. This could be due, for example, to a default by the generator.

heat rate, so that if the Power Station is not as efficient as promised, the Project Company may not recover the full cost of the fuel utilized.

Heat rate will vary with the level of generation: the lower the generation, the higher the heat rate. The extent, if any, to which adjustments are made when calculating the energy charge will depend on the reasons for the reduced level of generation. For example, the Power Purchaser would not wish to pay for the additional fuel consumed if poor maintenance has reduced availability.

E. Fuel

One of the key risk allocation areas in any project will be fuel supply. The level of complexity will depend on factors such as availability of the primary fuel, the ability of the Power Station to generate energy using alternative fuels (e.g. distillate in a gas-fired Power Station) and availability of a secondary fuel.

F. Ambient Conditions

The higher the ambient temperature, the less efficient the Power Station will be, and the lower its achievable level of capacity. Other ambient conditions, such as humidity and the frequency at which the system operates, can also affect efficiency. The Power Station should be designed to operate efficiently in the prevailing conditions. For example, if the operating conditions fall outside the agreed parameters and a drop in system frequency occurs, the Project Company would want an adjustment to the payment calculation to compensate for the drop in efficiency.

IV.
RISKS AND ALLOCATIONS

Inherent in Power Project financing are numerous risks, most of which present no correct method of allocation. The two distinct categories of risk addressed in this section are those outside the control of the parties and finance risks such as delays, defective performance, defaults in agreement and cost fluctuations. Finance risks may be divided into two categories: precommissioning and postcommissioning.[5] Precommissioning risks include development period costs, construction cost increases, delay in completion, defective performance on completion, and/or noncompletion. Postcommissioning risks include deficient performance, inadequate fuel supply, fuel price increase, O&M cost increases, insurance, grid/transmission system failure, regulatory/political, cost increases in other areas (if any, to the extent not covered elsewhere), tax increases, interest rate movements, exchange rate, exchange availability, and credit risk. A number of the risks cannot be considered in isolation: for example, performance could be adversely affected by other risks, such as Force Majeure.

5. A number of the following risks may not apply in any given circumstance and there may well be project-specific risks that are not listed.

Furthermore, it is impossible to consider any one risk in isolation without considering the allocation of risks as a whole. There are, however, several incorrect methods of allocating risk. First of all the party best able to manage a risk should bear it, and risks and rewards need to be balanced. For example, the Investors who expect to receive equity returns should be willing to undertake greater risks than the Lenders. However, there are other constraints on the amount of risk one party can take. For instance, a Power Purchaser offering cheap and badly needed power may be willing to assume more risk than the Lenders believe the Purchaser can bear, resulting in an unfinanceable project.

A. Force Majeure

Force Majeure is a generic term for events outside the control of the contracting parties. The parties to the IPP agreements can contractually designate the events to be considered Force Majeure. A number of events typically fall under this heading. The parties normally address Force Majeure events in their IPP contracts, employing insurance, when available, to minimize risks.

Because of its unpredictability, Force Majeure is perhaps the most difficult risk faced by the contracting parties. The problem will most likely be dealt with in the Construction Contract, the FSA and the PPA. It may be that an event of Force Majeure, which excuses the Contractor from performing and delivering the Power Station by a certain date, does not necessarily excuse the Project Company from doing so. For example, in negotiations, the Contractor may believe that a two years leeway for industry Force Majeure (see below) is necessary. The Project Company, however, might regard the risk as lower and be prepared to agree to a shorter time period with the Power Purchaser in return for something the Project Company may regard as more valuable (such as lower penalties for poor performance).

Events of Force Majeure include strikes or other industrial action (a contentious area); natural disasters such as earthquakes, hurricanes or floods; epidemics; acts of war, revolution or riots; sabotage or terrorism; acts of God; and plant breakdown (another contentious area). A strike, for example, could delay construction or prevent operation, while an earthquake could damage the Power Station and reduce its ability to generate. A riot could result in any of these obstacles.

In a developing country, Force Majeure events may be divided up so that country-specific risks are treated differently. Such risks include: political strikes or industrial action, acts of war involving that country, sabotage or terrorism in that country; and changes in law (this is obviously a risk in developed countries as well, but is likely to be treated differently). A change in law could affect the Project by delaying or stopping construction or operation until a new, perhaps discriminatory, law has been complied with. Alternately, regulation changes could increase capital or revenue costs by imposing new and stringent environmental rules.

For the purposes of this article, political Force Majeure refers to political strikes, acts of war, sabotage or terrorism and changes in law, while industrial Force Majeure means all other types of Force Majeure apart from political Force Majeure. In determining whether or not a particular event should constitute Force Majeure and, if so, into which category of Force Majeure the event should fall, it is necessary to consider the consequences of a party claiming Force Majeure relief. A party will only claim such relief if it is unable to perform its obligations. The most obvious consequence is being excused from liability for breaching those obligations. The PPA itself may contain an obligation to generate which would not *per se* be breached. However, the PPA might also contain provisions whereby the capacity payments are reduced if the level of available capacity is concomitantly reduced. The reduction might be pro rata, or it might be disproportionate, and require the Project Company to pay penalties for reduced availability. In these circumstances, the Project Company's income will fall, reducing Investors' returns and possibly threatening the economic viability of the project, if the Project Company is unable to meet its debt service.

The Project Company will, therefore, want to ensure that its income is maintained and that funding be available, where the event of Force Majeure results in a requirement that additional capital be spent (e.g. on rebuilding following an earthquake). The Power Purchaser, on the other hand, will not want to pay for capacity that is not available and will be unwilling to provide any additional capital funding.

One way of satisfying both parties may be through insurance, providing for both business interruption and reinstatement cover. To the extent that insurance is available, the Project Company should be able to forgo capacity payments and capital funding support.

Most problems arise where insurance is either inadequate or unavailable, and where capacity payments are adjusted for availability. If debt service and Investors' returns are to be maintained, the capacity payments would have to be calculated as if the Power Station had been available to generate. The Power Purchaser may feel there is a difference between keeping the project afloat versus maintaining the Investors' returns. In these situations, the Power Purchaser may be prepared, in certain circumstances, to pay capacity payments to the extent necessary to sustain income. These additional payments could be treated in a number of ways, e.g. as paid away, loans or prepayments.

B. Finance Risks

As mentioned above, finance risks may be categorized as either precommissioning risks or postcommissioning risks. The consequences of allocating a particular risk will depend on the effect of that risk eventuating. For example, a change in tax law might lead to a reduction in the Investors' returns, or a compensating increase in capacity payments.

The structure of risk allocation will also have an impact on which party is able to terminate the PPA and under what circumstances, and what amounts will

be payable on termination. The question of termination is considered at the end of this part. The following sections detail the considerations, consequences and possible risk allocations at successive stages of the power plant construction and operation.

1. Precommissioning Risks

a. Construction Costs Increase

Assuming that the Construction Contract is a Fixed Price Turn Key Contract (i.e., a contract where the Contractor will provide a Power Station that has passed pre-agreed performance tests for a fixed price), the Contractor will *prima facie* bear the risk of any increase in construction costs. However, in certain circumstances he may not be prepared to bear the risk. An example of this is where the increase is caused by Force Majeure or a change in law.

If there is an increase in Construction Costs because the regulatory framework is changed (for instance more stringent environmental regulations), requiring alterations to the specifications, both the Contractor and the Project Company will seek to place this risk on the Power Purchaser and/or the host government. If additional funds are needed in circumstances where the Power Purchaser has agreed to bear the risk, these could either be lent to the Project by the Power Purchaser or the Project Company could be responsible for raising the additional funds, with a corresponding increase in the Capacity Charge.

b. Delay In Completion

Another area of assumed risks is delay in completion. A delay can result from:

(a) a default by the Power Purchaser;
(b) a default by the Contractor (including its insolvency);
(c) Force Majeure; or
(d) insufficient material inputs needed to complete and commission the Power Station.

If the Power Purchaser defaults, the Project company will require the Power Purchaser to commence payment of capacity charges in full from the date on which the Power Station would otherwise have been available, since lenders will obviously want their debt serviced, and the Shareholders will want to start receiving returns. An area in which the Power Purchaser may have obligations that could affect Completion will be providing the facilities necessary for the transmission of electricity from the delivery point of the Power Station into the Power Purchaser's system. Moreover, the Power Purchaser may be required to assist with, or be responsible for, obtaining licenses or permits that the Project Company will need. To the extent possible, all licenses and permits will be obtained before Financial Close, because the Lenders will not wish to advance funds unless they are confident that the project can proceed through to operation. However, there will probably be some licenses that can only be obtained before or at commissioning. If the Power Purchaser accepts responsibility, then

it will probably be required to commence payments (in full or in part) even though the Power Station has not been completed, or agree that the costs of delay be compensated for by an increase in the capacity payments. If it does not, the Project Company might be required, by the Lenders, to have costs exceed either the facilities in place or the support from the Investors.

In addition, the Power Station will need electricity during its construction and testing. If this electricity is not provided, it will be difficult for testing to occur and commissioning could be delayed.

Where delay is caused by the Contractor's default, the Contractor should obviously be liable. Ideally, damages payable under the Construction Contract should at least equal the capacity payments and the damages that will be payable to the Power Purchaser for the delay (although the key element, at least from the Lenders' point of view, will be debt service). Exactly how this will be dealt with may vary, but the interrelationship between the liabilities of the Contractor to the Project Company and of the Project Company to the Lenders and the Power Purchaser must always be analyzed. In practice, the Contractor may not be prepared to risk paying damages in the full amount necessary to pay the Lenders, Power Purchaser and Investors. In such a case the Investors may not get their entire anticipated equity return, and the damages payable to the Power Purchaser may have to be renegotiated. To further complicate matters, the Project Company may not receive enough money to pay its Lenders while the Shareholders may have to assume some of the risk and guarantee payments, particularly to the Lenders.

As demonstrated above, delays caused by the default of the contractor or Power Purchaser result in complex analysis of risk allocation; however, the more problematic area is the effect of Force Majeure. The Project Company should at least be released from its obligation to deliver the Power Station on time if the Contractor is released under the Construction Contract. However, it is unlikely that the Lenders would agree to postponement of the debt service arising from an event of Force Majeure (although any costs of running the facility might be available to meet interest costs during a period of delay). The other alternatives include

(a) the Contractor taking all the Force Majeure risk, at least as to the payment of debt service, and insuring against the risk;
(b) the Power Purchaser commencing payments of the debt service element of the capacity charge (or, indeed, all of it) on the date on which the Power Station would have entered into commercial operations but for the event of Force Majeure; or
(c) the Project Company bearing all or some of the risk.

It is likely that the position to be taken will depend on the type of Force Majeure, namely whether it is political, strikes or other industry Force Majeure. Political events may legitimately rest with the Power Purchaser and/or the host government, strikes with the Contractor, and natural events may be insurable.

If completion is delayed due to a lack of fuel, whether due to noncompletion of the supply connection or otherwise, the party responsible for failing to

provide the fuel or the necessary link should be liable. However, the suppliers of some of the links (e.g. a harbor, a pipeline, an improved road) may not be willing or able to assume high levels of financial penalties.

Whether the Fuel Supplier itself is able or willing to assume the risk will clearly depend on its identity and the nature of the fuel supply arrangements. From the point of view of the Project Company, the level of damages for which the defaulting party should be liable should be sufficient to cover the capacity charge, although this may be difficult to negotiate and, in practice, the Project Company will have to take some financial risk.

Thus, in cases of delays, whether caused by default of either the Power Purchaser or the Contractor, by insufficient resources, or by Force Majeure, liabilities will shift among contracting parties. In the event of a delay due to the Power Purchaser, for example, the power company may require the Power Purchaser to assume responsibility for payment of the capacity charge as well as obtaining licenses for the power company. Where the Contractor is at fault, he will be liable for damages resulting from the delay. Delays due to Force Majeure introduce alternative risk allocations to either the Contractor, the Power Purchaser, or the Project Company. These various types of delay demonstrate the difficulty and multiple factors involved in assigning and re-assigning liability in light of the complex interrelation among the parties.

c. Defective Performance On Completion

One of the primary pre-commissioning risks is that of defective performance, which occurs when the power plant fails to perform at the agreed capacity or efficiency rate. As a result, the parties to the IPP agreements typically allocate the risk of defective performance by contract.

There will be a minimum performance level below which the Power Purchaser would refuse to accept any obligation to pay capacity charges. To ensure that the Project Company is not obliged to accept a Power Station that is then useless, this level would need to be reflected in the construction contract. For example, if the Power Purchaser requires a baseload Power Station capable of generating at least 1000 MW for twenty-three hours out of every twenty-four hours, burning fuel at a rate of 2300 BTUs/kWh, it would refuse to accept any obligation to pay capacity charges for a Power Station that could only generate 500 MW for 12 hours a day burning fuel at 5000 BTUs/kWh. Electricity from the latter would cost too much (because of the cost of fuel) and would be too unreliable. If, however, as would usually be the case, the Project Company has paid for most of the Power Station before testing, with maybe a 10% retention, it will obviously want to be reimbursed by the contractor. The Project Company's rights to reimbursement should be secured, certainly on the Power Station and possibly by the issue of guarantees or letters of credit supporting the Contractors' obligations. However, the lenders will require first claim over any such security.

Where this minimum performance level is attained, the Power Purchaser will be obliged to take the capacity of the Power Station and electricity generated by it. If, however, the level of capacity payments to be made is lower than if the Power Station had achieved the intended capacity, the Project Company will want to receive damages from the contractor. This sum would need to be sufficient to repay the debt down to a level where the lower capacity payments would meet the remaining debt service without reducing the equity return.

Furthermore, the Power Purchaser may insist on additional damages both as an incentive to perform and, arguably, as a reflection of the fact that if the Power Purchaser does not have available the capacity it had contracted for it would need to find alternative sources of power. These damages will probably be a fixed amount per megawatt of deficiency. Whatever level of damages is agreed upon, the obligation to pay this amount should be borne by the Contractor.

d. Non-Completion

If the Power Station is never completed, or never attains the minimum standard, the damages sought by the Power Purchaser may be the same as for a claim of defective performance, namely a fixed amount per megawatt that was not delivered. The possible reasons for non-completion are the same as for delay:

(a) a default by the Power Purchaser;
(b) a default by the Contractor;
(c) Force Majeure;
(d) lack of fuel or other materials.

Noncompletion may either be a delay that has gone on for so long that a pre-agreed time limit has been exceeded or an event that renders the project impossible to complete. In either case, the PPA will be terminated, and termination payments might be due between the parties.

2. Post-Commissioning Risks

a. Performance

The Power Station might underperform in two areas:

(a) inadequate production (i.e. the Station is not as reliable in generating electricity as the contractual target assumes);
(b) high heat rate (i.e. the Station burns more fuel than anticipated for the required electricity).

Assuming poor availability is not caused by Force Majeure or by the Power Purchaser's own actions, the Project Company would expect to be penalized. If the actual generating capacity of the plant to generate is below the target level, the Project Company would expect a reduction in the capacity payments. For example, if a Power Station with a target availability of 1000 megawatts could only deliver 750, only 75% of the capacity payments would be received. This reduction could be achieved either by way of a decrease in the monthly pay-

ment, or by taking the average availability over a longer period, enabling the Project Company to make up deficits.

The Power Purchaser will rarely be satisfied with a simple pro rata reduction; however, penalties incurred if actual availability falls below target availability by more than a certain amount are invariably the subject of some negotiation. The Power Purchaser will want penalties to apply early and at levels sufficient to provide a real incentive to the Project Company to operate and maintain the Power Station at a high standard.[6]

Assuming that the cost of fuel is a straight passthrough, the Project Company will guarantee a maximum heat rate (i.e. the amount of fuel, in BTU's or kcals, that will be burned to produce each unit of electricity) so that the amount payable by the Power Purchaser for fuel will be calculated by reference to the electricity taken and the guaranteed heat rate. If the achieved heat rate is higher, the Project Company will need to burn more fuel to generate the electricity than it is being paid for and it will not be fully compensated. It may be that a higher heat rate is due to defective fuel, in which case recourse will probably be available under the FSA. If fuel costs are not a passthrough, electricity will be sold at a fixed price, so that the heat rate would become irrelevant.

If the lack of availability is caused by Force Majeure, the Project Company will want to receive capacity payments (or funds from other sources) equal to its debt service, as the Lenders will be unwilling to waive or defer their interest payments. In the case of political Force Majeure, the Project Company may well wish for capacity payments to continue in full, as if it were able to generate at the target level. If the drop in availability is caused by industry Force Majeure, the level of capacity payments payable could range from the full amount to zero. The impact of insurance will be particularly relevant here, as many industry Force Majeure risks are insurable. If adequate business interruption insurance is obtained, the Project Company may receive sufficient funding to allow it to at least be able to continue servicing its debt.[7]

b. Fuel Supply Deficiency

If there is an FSA, fuel supplies may be interrupted either by a default by the fuel supplier or by an event of Force Majeure. A default by the fuel supplier will lead to a drop in the availability of the Power Station unless alternative fuels are obtained. While fuel suppliers who default will be liable, they will be highly reluctant to agree to a level of damages in excess of the cost of obtaining additional fuels in the market and are unlikely to be willing to meet the full cost of the capacity payments foregone due to the low availability of the Power Station. If the fuel supplier is a state entity, it may be that the risk of default by the fuel

6. There are a number of ways in which availability can be measured, (e.g. hourly, weekly, monthly, annually) and the details are likely to be complex.

7. The Project Company would not expect penalties to apply where the shortfall in availability was caused by Force Majeure, since penalties are intended to provide an incentive. As Force Majeure events are, by definition, outside the control of the Project Company, this should be acceptable to the Power Purchaser.

supplier can be passed on to the Power Purchaser. Thus, capacity payments would continue notwithstanding the fact that no capacity was available.[8]

The key factor is the party which is best able to obtain alternate fuels. If, for example, the fuel supplier is the state oil and gas company, and the gas necessary for the Power Station is unavailable, the fuel supplier can still supply distillate. Alternatively, if the Shareholders of the Project Company include major oil and gas companies, and the facilities near the Power Station are appropriate, a default by the gas supplier or other cessation of supply may be best dealt with by the Project Company itself obtaining alternate fuels on the "spot" markets.

c. Fuel Price Increase

The allocation of the risk of a fuel price increase will depend on the contract and the FSA. Actual fuel costs may be a straight passthrough to the Power Purchaser, or there may be provision for fixed fuel costs to be escalated at a notional rate over the life of the PPA.

d. O & M Costs Increase

The O & M Agreement will cover the Operator's fees and the maintenance costs. As with the allocation of a fuel price increase, these can either be passed through to the Power Purchaser or by a fixed amount included in the Capacity Charge, with a provision for escalation at a fixed rate.

e. Insurance

In developed countries, the project company usually assumes the insurance risk. The whole question of insurance is inextricably linked with Force Majeure because a large number of Force Majeure risks are insurable. The issue then is who bears any uninsured losses or provides the funding before the insurers provide payment. In developing countries, however, the insurance market may not have the requisite strength or depth, particularly if the Power Station is a large one and legislation requires insurance to be placed through domestic insurers.

Insurance costs could be treated as a fixed amount in the Capacity Charge, with the Project Company being responsible for increase. Alternatively, increases could be passed through to the Power Purchaser, particularly if they are significant. In the former case, the Power Purchaser will clearly be concerned to ensure that the minimum insurance levels are maintained; whereas in the latter case, it will be more concerned to see that the Project Company does not obtain unnecessary insurance.

8. This will not be the case in all countries where the Power Purchaser and fuel supplier are both state entities.

f. Grid/Transmission Failure

If the Power Purchaser's system fails, the Power Purchaser will be unable to take electricity. The failure could be a result of a failure by the Power Purchaser to maintain its system, or a result of Force Majeure. In the former case, capacity charges would continue to be payable. In the latter, the Project Company will strongly resist taking the risk.

g. Political/Regulatory/Changes In Law

Changes in law or changes in the regulatory environment can lead to a passthrough of resultant cost increases. They may also be events of political Force Majeure, where these changes prevent the Project Company (or the Contractor or Operator) from performing its obligations.

To the extent that a change in law leads to an increase in costs, the Project Company will always seek to pass through this increase by a raise in the capacity payments. This is because the price agreed for the life of the PPA was based on the assumption that the regulatory requirements at the date of signing the PPA would continue to prevail. Furthermore, it may be that the Power Purchaser feels unable to take full responsibility for government actions such as changes in law and that some form of government support is required. The less structured and stable the regulatory environment, the more likely that changes that actually prevent implementation will be regarded as political Force Majeure and, as such, will be expected to lie with the Power Purchaser or the host government.

Political risk other than changes in law will be difficult to define and is likely to be a sensitive area. Protection against this type of risk is only needed to the extent that external investors perceive a lack of political stability.

h. Increases In Costs

Increases in costs (whether operating, maintenance, capital or otherwise) will normally be absorbed by the Project Company unless the reason for the increase is a change in law, an increase in the cost of a passthrough item (such as fuel or insurance, if so agreed) or an event of Force Majeure. In these situations, the cost increases will (or might, depending on the Force Majeure provisions) be borne by the Power Purchaser or host government.

i. Increase In Taxes

External investors will be very concerned that their Internal Rate of Return (IRR) not be eroded. Ideally, from the point of view of the Project Company and the Investors, any increase in taxes affecting the Project Company would be compensated. Otherwise, an increase in tax would diminish the IRR. This position is easier to argue where the increase in taxes is discriminatory, or where clear assumptions have been made as to the rates and incidence of tax. It would be more difficult to argue, however, that a general increase in the rates of corpo-

ration tax should not apply to the Project Company, particularly where the majority of the shareholders are local.

j. Interest Rate Movements

The Project Company could fix a debt-service component for the capacity charge and absorb, or take the benefit of, any movement. On the other hand, the Power Purchaser may wish to assume the risk/benefit.

Where funding is obtained in different currencies, such as dollars to acquire the turbines and local currency to pay other construction costs, the risk of interest rate movements may be treated differently with respect to each currency. For example, the dollar funding may be available at a fixed rate (say from an export credit agency) or alternatively, the Project Company may assume the risk of movement in any event (perhaps because adequate hedging was available). The Power Purchaser may feel that current interest rates for local currency funding may be susceptible to reductions (if the inflation trend is downwards, for instance), in which case the Power Purchaser may wish to assume any benefit.

k. Exchange Rates

It will obviously be of great importance to external investors that dividends, which will be payable in the local currency, be paid abroad in such amounts that ensure that the IRR is not eroded. Thus, if the exchange rate between the domestic currency and the external investor's currency changes, the external investor may find that the amount of return is insufficient. Ideally, the Power Purchaser will agree to pay an amount in the local currency sufficient to buy the foreign currency required to meet at least a significant part of the debt service and the IRR.

l. Exchange Availability

The external investor will be concerned not only with the amount of currency received but also that it can be transmitted abroad. If exchange controls are in place, or there is a perceived risk that they could be imposed, the Power Purchaser may not be in a position to mitigate this risk and assurances will have to be obtained from the host government.

m. Credit Risk

The credit risk of the Power Purchaser will obviously be relevant to the Project Company, and enhancement may be required, by way of escrow accounts, letters of credit and/or government guarantees.

3. Termination

As mentioned above, the allocation of risks must be considered in the context of which party has the rights to terminate and what amounts are payable upon termination. For example, a change in the law could make it illegal for the

Power Station to generate. If it were agreed that capacity payments would be payable in full notwithstanding the lack of capacity, the Power Purchaser is more likely to want the right to terminate than the Project Company. The Project Company may be less concerned about the Power Purchaser having this right if the amount payable upon termination is sufficient to repay all outstanding debt and compensate the Project Company for its loss of revenue.

An important factor will be whether, upon termination, the Power Purchaser is both able and willing to transmit (or "wheel") power generated by the Power Station to third parties, and whether there is a reliable, competitive market in which to sell. If not, then the Power Station will be worthless unless there is an option for the Project Company to put the cost of the Power Station on the Power Purchaser at a fixed price.

A number of concepts may be relevant:

1. the amount the Project Company needs to receive to compensate it for the loss of future revenues;
2. the amount the Power Station would cost to build on the date of termination, depreciated over its actual useful life, as opposed to its accounting life;
3. the open market value of the Power Station;
4. the actual cost of the Power Station depreciated over a set period;
5. the total amount of debt outstanding. Lenders, and the Project Company, will obviously want the amount payable on termination never to be less than this amount.

The application of these concepts can vary from the very simple (compensation for loss of future revenue in all circumstances) to the highly complex (different combinations for different defaults and events of Force Majeure).

V.
CONCLUSION

The above analysis does not purport to provide answers but seeks merely to raise some of the issues that may be relevant to any particular power project and to set out the ways in which those issues might be addressed.

There are numerous issues that have not been addressed, or only briefly mentioned, such as the interconditionality and interrelationship between project contracts; the question of who has what approval rights over which project contracts; the conflicts of interest between investors as investors, contractors, or operators, or equipment suppliers. Also, there are practical considerations, such as the timing of negotiations and the progress on the various aspects of the project, that must be taken into account in order to achieve resolution of the issues in the most effective order and the most efficient way. For example, finalizing the Credit Agreements before commencing negotiations on the Construction Contract or the PPA will be difficult, and the benefits of adopting an informed and practical approach will soon become apparent.