

IPP's Project Risk Classification

IPP has to ensure that under all Project Agreements and Contracts he only bears, as far as possible, those risks within its control.

The table below is a summary of relevant risks and mitigating factors associated with the Project.

The list does not purport to be definitive or contain every risk. The IPP should carefully conduct an independent evaluation of the risks associated with the Project.

Risk Factor valuation: 1 → IPP's Low Risk
 10 → IPP's High Risk

RISK MATRIX				
ID	RISK	BEARER OF RISK	RISK FACTOR	MITIGATING FACTORS
1.	CONSTRUCTION PERIOD RISKS			
1.1	Completion Risk	EPC Contractor		Liquidated damages (LD) for delay.
1.2	Construction Price Risk	EPC Contractor		EPC price → lump sum, turnkey contract price & construction budget with contingency.
1.3	Permitting and Approvals	EPC Contractor/IPP		EPC Contractor shall be responsible for obtaining the majority of permits and approvals.
1.4	Project Performance	IPP		LD for power output and heat rate deficiency.
2.	OPERATING RISKS			
2.1	Market Demand and Price	IPP/Lenders		Maximize power production for own consumption at highest efficiency.
2.2	Operating and Maintenance Costs	O&M Operator/IPP		The IPP shall enter into an O&M Agreement with O&M Operator for the operation and maintenance of the Power Plant. EPC Contractor shall provide maintenance services subject to a long term maintenance agreement.
2.3	Fuel Supply	IPP/Fuel Supplier(s)		The IPP shall enter into a long-term fuel supply agreement with Fuel Supplier.
2.4	Fuel Price	IPP/Fuel Supplier(s)		The IPP shall enter into a long-term, price indexed, fuel supply agreement with Fuel Supplier.
2.5	Equipment Breakdown or Failure	O&M Operator/IPP		Use of equipment with proven design and operational records. The IPP shall maintain a supply of critical spare parts at the Plant Site. Relevant warranties shall be fixed under the EPC Contract. The IPP shall maintain insurance coverage including business interruption insurance.

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3	Regulatory and Environmental Risks			
3.1	Permitting and Approvals	O&M Operator/IPP		To perform advanced review and valuation of all necessary operational permits and approvals. The IPP and O&M Operator shall closely cooperate with relevant Governmental Authorities.
3.2	Environmental	The IPP		Proper EIA study, monitoring Project's environmental parameters and ensure compliance, emission guarantees from EPC contractor.
4.	BUSINESS RISKS			
4.1	Industry Restructuring	IPP/ Lenders		.
5.	FINANCIAL RISKS			
5.1	Force Majeure	IPP/Lenders		The IPP shall purchase an insurance to cover certain force majeure events.
5.2	Change in Law	IPP/Lenders		
6.	ECONOMIC RISKS			
6.1	Interest Rate	IPP		Conservative assumptions shall be made. Strong debt service coverage ratios during the tenor of the debt shall be achieved.
6.2	Inflation	IPP		
6.3	Currency Exchange Rate	IPP		To maximize local currency portion for capital costs and USD for exported revenues.

PROJECT RISK EXPLANATIONS

1 Construction Period Risks

1.1 Completion Risk

There is a risk that delays in construction will result in delays in operations and thus increased construction costs and a delay in revenue receipts.

The EPC Contract shall be a fixed price, lump sum turnkey contract with Substantial Completion Dates.

The EPC Contractor shall be liable for liquidated damages in the event the Project does not achieve Substantial Completion by the Guaranteed Completion Dates.

The IPP shall obtain insurance, including delay in startup insurance, to protect against certain force majeure risks which may delay the Project.

1.2 Construction Price Risk

There is a risk that the construction cost will exceed the projections.

The EPC Contract shall be a fixed price, lump sum turnkey contract. The construction budget shall include reasonable contingency.

1.3 Permitting and Approvals

There is a risk that the issuance of certain permits and approvals may be delayed or that certain permits and approvals will not be obtained.

The EPC Contract shall make the EPC Contractor liable to obtain a majority of the permits and approvals required for the Plant construction.

1.4 Project Performance

There is a risk that the Project will not perform as guaranteed by the EPC Contractor.

The EPC Contract shall have provisions for minimum performance thresholds to be met by the EPC Contractor for heat rate, output, emissions, noise and reliability in order to achieve Substantial Completion.

Failure to meet the guaranteed performance levels shall be considered a breach of the EPC Contract.

In the event the EPC Contractor shall not meet the Guaranteed Net Output and the Guaranteed Net Heat Rate, the EPC Contractor shall be liable for liquidated damages.

2. Operating Risks

2.1 Market Demand and Price

Increased competition as a result of possible restructuring in the country's power industry may lead to reduced demand and/or Utility's tariff prices which may be lower as Project power generation cost.

In order to maintain long term competitiveness on the Country's electricity market, the Project shall utilize the latest modern technology with highest possible power generation efficiency.

2.2 Operation and Maintenance Costs

There is a risk that operating and maintenance costs will exceed projections.

The O&M Operator shall be subject to liquidated damages in the event of non-performance for availability, capacity, heat rate and emissions under the O&M Contract.

Performance areas that do not meet the established targets shall be quickly identified and a plan should be established and implemented to rectify deficiencies.

2.3 Fuel Supply

There is a risk that fuel supply could be impaired, thereby decreasing the output of the Project.

The Fuel Linkage shall oblige the Fuel Supplier to provide a minimum guaranteed amount with long term supply.

The Fuel Supplier has to be penalized under the fuel supply agreement as result of its breach of such warranty.

2.4 Fuel Price

There is a risk that increases in the fuel price could increase thereby decreasing the cashflow of the Project.

The IPP shall enter into a long-term, price indexed, fuel supply agreement with the Fuel Supplier.

2.5 Equipment Breakdown or Failure

There is a risk that a failure of certain equipment may cause forced outages, thereby reducing the cashflow of the Project.

All of the components used in the Project shall be well proven technology supplied by internationally recognized equipment manufacturers with extensive manufacturing experience.

EPC Contract shall contain the clause that the Plant must pass certain performance tests demonstrating output, heat rate and reliability. The EPC Contract shall provide for two year warranty after the Substantial Completion of the Project.

In the event of repairs conducted pursuant to the warranty, the coverage period of the warranty shall be extended accordingly. Latent defect clause shall be included in EPC Contract.

The IPP shall purchase and maintain a supply of all critical spare parts for the Plant.

The IPP shall maintain certain insurance including industrial all risk and industrial all risk – advance loss of profits policies.

Such policies shall cover the replacement cost of the Plant equipment as well as the loss of profits due to certain insurable events.

3. Regulatory and Environmental Risks

3.1 Permitting and Approvals

Country & state specific operational and other permits and approvals are required. Non-compliance could result in the suspension or cancellation of the Power Generation License and/or the imposition of fines.

The IPP and O&M Operator shall perform advanced review and valuation of all necessary operational permits and approvals.

The IPP and O&M Operator shall closely cooperate with relevant Governmental Authorities.

3.2 Environmental

Each power plant project in shall comply with country's environmental regulations governing operation of the power plant, including meeting air, water and noise emission standards.

Non-compliance could result in the suspension or cancellation of the Power Generation License and/or the imposition of fines.

The adoption of new laws or regulations, or changes in the interpretation or application of existing laws or regulations, could require the IPP to make additional material expenditures on environmental compliance, and IPP's ability to operate the Plant in a cost effective manner could be materially adversely affected.

The Plant shall be designed and constructed utilizing the latest technology designed to conform to country's environmental regulations.

The IPP and the O&M Operator shall undertake an EIA monitoring program designed to ensure compliance with all material environmental regulations.

Pursuant to the O&M Contract, the O&M Operator shall be required to meet certain guaranteed levels with respect to emissions.

In the event the O&M Operator does not meet these emission levels, the O&M Operator shall be liable for liquidated damages.

4. Business Risk

4.1 Industry Restructuring

The respective country may change the structure of the electricity industry with a view to setting up a power pool or other market based system. The new market structure may likely require power plants to sell all or a substantial part of their generating capacity through a power pool or market system.

In the event of an industry restructuring, appropriate amendments to PPA (if any) shall be prepared and negotiated.

The IPP shall maximize consumption of power produced from the Project and shall participate in country's power sales & purchase pool system, but this may be subject to market risk and price risk. Utilization the latest power generation technology with most competitive efficiency shall make the Project most competitive.

5. Financial Risk

5.1 Force Majeure

In the event of a force majeure, the IPP may be subject to certain additional costs which will negatively impact the Project and its cashflows.

The IPP shall purchase an insurance to cover certain force majeure events.

5.2 Change in Law

In the event of a change in law, the Project may incur additional capital or operating costs thus reducing the cashflows of the Project.

6. Economic Risks

6.1 Interest Rate

There is a risk that increases in interest rates may adversely affect the cashflows of the Project.

Conservative estimates for interest rates shall be used in forecasting debt service payments.

The Project shall be funded substantially by fixed rate bonds that will mitigate the impact of interest rate increases on the economics of the Project.

6.2 Inflation

The Project's revenues may not be sufficiently adjusted to compensate for inflation in operating costs.

6.3 Currency Exchange Rates

Certain Project capital and operating costs may be in foreign currencies, whereas the financing and revenues for the Project are in local (project) currency.

The EPC Contract shall maximize local portion for material and services supply to minimize the impact of fluctuations in exchange rates.

Foreign exchange obligations during Plant O&M period will be with respect to spare parts, maintenance under the O&M Contract and profit transfer to equity holders.