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Abstract

This paper addresses issues in structuring the key contracts to allocate risk in a power plant project financing. No "magic formula" exists. Rather, a thorough, comprehensive, and detailed approach is needed on a case-by-case basis.

About the Author

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Presentation

Structuring contracts to distribute risk involves more perspiration than inspiration. The following checklist usually elicits groans from developers who would like an easier process to create a financeable project.

The good news is that successful financing can be guaranteed if the checklist is followed. The bad news is that the checklist is so detailed and comprehensive that it is rather imposing. What happens in real life is that energy project developers take on a little bit of an extended risk profile in one area, or they may move ahead on a project with a little more commitment and a little sooner than may be fully justified. In other words, developers are looking for 80% to 90% compliance with the checklist.

The checklist has 16 main points, comprising major areas of total feasibility for an independent power project. Note that some issues are dependent on the project: a hydroelectric project will have no fuel supply agreement, for example. However, there are many areas in common, and the risk allocation process always has to make sense.

1. Developer Profile. The issue here is who is the developer (also called sponsor, backer, proposer) of the project and what are their qualifications? Venture capitalists say that

management is the most important factor is the investment decision; not product, not technology, not business plan, but management: people, experience, track record. The same is true in independent power project development and finance.

Do members of the development team have backgrounds in relevant sectors of electric power, project finance, law, regulatory relations, business administration? What projects were done by this group? What role did they actually have in the projects? What familiarity with the country is evidenced? What information is available on the developer, the company, financial data, projects, and plans?

All developers have a lopsided expertise portfolio. The better developers recognize this and shore up weak areas with additional employees, contractors, and by strategic alliance.

2. Project Status. A power project evolves from concept to electric generation in many stages, usually grouped into phases of development, construction, and operation. During development, the project takes shape through negotiation and written documentation of increasingly specific levels of detail and increasing commitment.

The term "project status" is a measure of how far along in development is the project: is it just an idea, is there a preliminary letter of letter, or is there a power purchase contract. Basically, what is signed and committed, and by what party? Also, are there obvious "deal killers" such as financing or local support which have not been worked out?

The project status can be evaluated by going through a checklist such as ours and judging what has been nailed down, and what remains to be done.

3. Economics. The project economics measure how profitable is the proposed project, meaning how much money do you put in and how much money do you get out.

However, for project developers at the early stages there should be a simple, base-case answer to two questions: 1) how much does the project cost to build and 2) what is the projected profit? After those two questions are answered, the next issues are: 1) does the risk justify the investment, and 2) what is the best financing deal to get the money for the investment.

4. Power Sales. . Having a power purchase agreement is necessary but the purchasing utility must be creditworthy as well.

In the early stages of developing a project, there needs to be some type of evidence that a creditworthy buyer will commit to purchase electricity on a basis that justifies the investment. Such evidence can be a letter of intent, a memorandum of understanding, a draft power purchase agreement, or any other document that sets forth the "deal."

The PPF checklist provides many other points to consider such as interconnection, coordination with other contracts, and guarantees. For example, there must be a linkage

between fuel prices and power prices so the project is not caught in a squeeze between revenues and expenses.

While new ground is being broken with respect to financing plants on a merchant basis, these are only the province of big corporate sponsors, and any project financing for merchant plants has been very limited. So, for the entrepreneurial developers, the tried-and-true risk allocation formulas must be followed if a financeable project is the goal.

5. Engineering/Feasibility Study. This areas deserves the least amount of time and effort during early development. Engineering usually not as difficult compared to other issues such as power sales, fuel, foreign exchange, financing, regulation, and legal framework.

The specifications for 50 MW cogeneration project in Seattle have similar engineering if it were in China, Chile, or Chad. But, the other aspects of the project: legal, financing, and foreign exchange are very different propositions in each case. Usually, too much time is spent on engineering feasibility when the commercial and legal aspects are relatively unexplored.

After the early development period results in some evidence that power can be sold to creditworthy buyer, preliminary engineering should be done, as well as preliminary environmental work, siting analysis, utilities interconnection, and other basic physical considerations.

6. Fuel Supply, Hydrology, Wind Resource.

The fuel supply needs to determined from the mine-mouth (or the well-head, or the river source, as the case may be) all the way to the burner-tip. The above anecdote is meant to convey that the big elements of the fuel supply need to be sketched out in a detailed manner appropriate for the
project's particular stage of development.

The source of supply, the transportation and the cost are the key elements of fuel supply. However, another critical issue is what happens if the fuel is not available. Does the supplier make up lost profits? What credit stands behind any promises made by the fuel supplier? Are there alternative supplies available? What events are force majeure, allowing the fuel supplier off the hook? Will the power buyer take the risk that fuel supply may be interrupted and make the project whole?

Clearly, it makes a big difference as to who is the fuel supplier. Project financing will only be available with a strong company.

7. Equipment. With rare exceptions, project financing is not available for new technologies and is not available for used equipment unless covered by a like-new guarantee. When it comes to equipment choices, lenders and investors do not want to hear words like innovative, improved, new, state-of-the art, or better. They want to hear

words like predictable, proven, stabilized, and ordinary. Venture capital is the proper arena for equipment breakthroughs, not project finance.

The financing effect on equipment choice is can be much more dramatic than cost savings on purchase price. A 10% savings on the purchase price of a gas turbine may save $1 million up-front, but being able to obtain expert-credit financing can save the investor many millions in
cash flow over time.

To get financing, used equipment must have a guarantee that makes it not any more risky than buying new equipment. Sometimes used refurbished equipment can work out, but it raises issues such that the good explanation takes more time than the attention span of the money.

8. Engineering, Procurement, and Construction. The EPC contract should provide that the project will be built on-time, under budget, and perform adequately. This usually is not that significant an issue in early development unless the technology is non-standard.

A mistake often made by developers is to overly pay attention to EPC matters while the power sales arrangements are crying out for development attention. Sometimes, preliminary EPC arrangements are necessary in order to gain a power purchase commitment. But otherwise, the EPC should be mostly left to do after the power sales and after fuel supply.

Instead of "If you build it they will come," the rule is: "If you can sell the power you can probably get it built."

9. Operation and Maintenance. Like EPC, the issues here are usually not that difficult to work out compared to those presented in power sales and fuel. Many qualified O&M operators are available, plus the O&M cost is a relatively small percentage of the electric price. With all due respect to my friends in the O&M world, the nitty-gritty of O&M may be safely left until relatively later in development process.

10. Regulatory, Legal. Legal and regulatory issues are fundamental to successfully developing a power project. What does a contract mean in the host country? What reliance can be placed in the regulatory system? If project financing is planned to used, then the developer needs to know what the financing community thinks of the legal and regulatory landscape for the country in question and what financing will be available.

This is can be an extremely tricky call, since most projects take several years to develop and the legal and regulatory environment can change dramatically in that time frame. Also, the legal and regulatory environment is not usually under the control of the developer.

The checklist issues are meant to ensure that the appropriate financing structure is matched to the prevailing legal and regulatory environment so the money will be there when needed.

11. Taxation. Since taxes are a fact of life, the only question is whether or not the power price, and resulting return, properly take into account taxes, import duties, fees, and any other tax-like charge to the project. A project needs to not leave itself open to return deterioration through new taxes or tax rate increases, so the right pass-through language needs to be included in the power purchase agreement.

Tax lawyers point out that a tax holiday may not be worth much if the end result is to anyway pay U.S. taxes due to utilizing foreign tax credits. An interesting possible strategy for U.S.-based full taxpayers is to not seek tax holidays, and instead pay taxes abroad, create goodwill in the host country, and then deduct the taxes paid in the U.S., rather than negotiate for tax benefits.

12. Foreign Exchange. This is a critically important issue that can make or break financing. It should be one of the first considerations in developing a power project, since foreign exchange can affect every cost item, as well as on-going revenues and expenses. Financing parties' opinions about foreign exchange are not usually subject to persuasion, and so project structures need to have foreign exchange denominated properly.

If the developer can finance the project then foreign exchange doesn't matter. But if debt or equity financing is going to be needed later, then the foreign exchange consideration is important. There should be some precedent for the assumptions used in the financial model, that is, financing should be identified that was done similarly with respect to foreign exchange.

13. Insurance. Insurance can be used to mitigate many different risks, each with its own set of costs and benefits. Sometimes developers cite the possible availability of political risk insurance from OPIC (Overseas Private Investment Corporation) or from MIGA (Multilateral Guarantee Insurance Association) without checking to see if it's available for that country and the cost. Also, those institutions do not cover foreign exchange risk in general, but only a subset of risks, and collecting on the policy may require prior arbitration or going all the way through the court system in-country.

14. Financing. Financing is often cited as the biggest obstacle to development. Likewise, it may be said that obesity is an obstacle to exercise. In fact, financing only the result of developing a project which deserves financing, and the lack of financing means that the development approach was wrong.

During the development period, the financing question is whether or not there is enough money to do the tasks necessary make the project attractive to any other party. If the developer has financing wherewithal to build the project, any arrangements may be

implemented. However, if additional equity or debt financing is planned to sought, then the right risk profile target must be held as a standard throughout the development.

15. Risk Analysis. Two points need to be made about risk analysis: 1) risk analysis depends on financing, and 2) financing parties' opinions about risk are usually not subject to much persuasion by the developers analysis. By thoroughly understanding risk analysis from the perspective of the financing party, the risk analysis will confirm that financing should take place. If the developer is also providing the financing, then the risk analysis is a self-check. If third-party financing is needed, then starting point for risk analysis is the financing viewpoint.

16. Dispute Resolution. There are standard strategies for dispute resolution, and in addition, the developer should present some data about the results of disputes in prior independent power projects or other commercial disputes.

Checklist Conclusion.

When the developer looks at a project with an eye towards financing, they should go through the checklist, either explicitly or implicitly. If the "to-do" list is a lot longer than the "done" list, then the project financing work is a long way off.. Methodically thinking about every item in the checklist is sure to uncover issues that will come up sooner or later. Dealing with the checklist issues, or having a credible plan to do so, will ensure development and financing success.

Checklist for Financing and Developing Power Projects

I. Developer Profile
- A. Biographies of principals, experience in:
  1. Private non-utility power plant development
  2. Project finance, lending, equity investment
  3. Legal: corporate, securities, regulatory
  4. Engineering: power plant, permitting, design
  5. Government relations, legislation, regulatory
  6. Operations and maintenance of power plants
  7. Managing projects of similar size and cost
  8. Energy economics, tariffs
  9. Insurance, taxes, business administration

- B. Prior projects
  1. Background
  2. Role, nature of involvement
  3. Results
- C. Current projects
  1. Background
  2. Role, nature of involvement
  3. Results
- D. Experience in country
- E. Corporate information
  1. Annual report
  2. Ownership
  3. Financial statements
  4. 3d Party information: industry reports, press

II. Project status
- A. Status of key agreements
  1. Permits
  2. Concession agreement
  3. Project award from competitive bid
  4. License from government
  5. Site control
  6. Status of most critical arrangements:
     a. Power purchase
     b. Fuel supply
     c. Engineering, Procurement and Construction (EPC)
- B. Schedule to complete development
  1. Tasks, timing, cost
  2. Responsible party
  3. Milestones,
  4. Deadlines

C. Support for project
  1. Local
  2. Regional
  3. National
  4. Utility

III. Economics

A. Financial projections
  1. Non-recurring costs:
    a. Development cost
    b. Financing-related costs
    c. Construction cost
  2. Annual cash flows
    A. Revenues
      i) Electricity
      ii) Steam
      iii) By-products
      iv) Tipping (for waste to energy)
    B. Operating expenses
      i) Fuel
      ii) Labor
      iii) Administration
      iv) Insurance
      v) Fees
  3. Pre-financing economic evaluation
    1. Risk adjusted comparison
    2. Benchmarks used
  4. Taxation
  5. Financing cash flows, assumptions
    a. Equity
      i) Comparable projects, investments
      ii) Upside, downside, tax-related
    b. Debt
      i) comparable debt financing
      ii) credit analysis
    c. Lease financing
  6. Reserves funding, build-up, draw-downs
  7. Periodic overhauls
  8. Foreign exchange effect

B. Documentation of power pricing:
  1. Contracts: signed, negotiated, or proposed
  2. Forecasts: internal or 3d party
  3. Regulated tariffs

C. Documentation of operating expenses:
  1. Contracts: signed, negotiated, or proposed

2. Forecasts: internal or 3d party
3. Prior projects, comparable projects
4. Industry standards

D. Disposition/refinancing/transfer

IV. Power sales

A. Sales to utility
1. Minimum take, take-or-pay, merchant
2. Competitively awarded, negotiated
3. Creditworthiness of utility
4. Supply proposed relative to utility size
5. Track record honoring IPP contracts
6. Susceptibility to political influence
7. Privatization, ownership structure
8. Economic growth in region

B. Sales to local industry
1. Minimum take, take-or-pay, merchant
2. Competitively awarded, negotiated
3. Creditworthiness of industrial
4. Alternate power purchasers

C. Interconnection, transmission

D. Penalties, timing, deliveries

E. Coordination with other contracts
1. EPC: plant completion versus obligation to deliver power
2. Fuel: pass-through of price changes, fuel availability effect on obligation to deliver power
3. O&M and other expenses: pass-through of expense changes in power price

F. Payment support
1. Payment guarantees, letter of credit
2. Implementation agreement
3. Escrow accounts
4. Lock-box accounts

V. Engineering/Feasibility Study

A. Site suitability
1. Zoning
2. Local support

B. Fuel procurement
1. Source, distance, transport
2. Interconnection, on-site handling

C. Proposed design, technology, cost
1. Equipment efficacy, track record
2. Cost, financing implication

D. Fuel and electrical interconnection

1. Existing or new interconnection
2. Ownership
3. Responsibility to build and maintain
4. Dedicated or shared

E. Environmental impact, need for study, exemption
1. Requirements for legal compliance, financing
2. Local support impact

F. Power purchaser load profile:
1. Seasonal fluctuation
2. Daily fluctuation
3. Dispatching, curtailment, notice, interval

G. Water supply and discharge
1. Source, specification
2. Discharge specification
3. Permitting process, control

H. Ash disposal for solid fuel projects
1. Disposal, sales
2. Composition, change in fuel effect
3. Governing regulations

I. Emissions controls, options, cost
1. Standards used
2. Scrubbers, precipitators, fluid bed

J. Maintenance schedule, overhauls, spares
1. Prevailing standards in country

K. Other site mitigation
1. Building
2. Forestation
3. Noise abatement

VI. Fuel Supply, waste-stream for thermal projects:
1. Fuel/waste contract, term, supply
2. Specification
3. Supplier creditworthiness
4. Alternate suppliers
5. Coordination with other contracts:
    1. PPA, availability force majeure
    2. EPC, equipment suitability
    3. O&M, e.g., gas clean-up, coal washing
6. Heat content, measurement, billing and payment

VII. Equipment

A. Operational characteristics
1. History in power application
2. Efficiency
3. Reliability

4. Availability
5. Environmental: emissions, water needs, water discharge, noise, visual

B. Cost, payment schedule, delivery deposits
1. Negotiated or competitive bid
2. Import duties
3. Physical delivery considerations

C. Guarantees, creditworthiness for guarantees

D. Financing considerations, export credit, vendor

E. Technology, suitability for remote service
1. Maintenance expertise required
2. Fuel sensitivity
3. Sensitivity to heat, moisture

VIII. Engineering, Procurement, and Construction (EPC)

A. EPC contractor:
1. Qualifications
2. Experience
3. Creditworthiness

B. Contract terms:
1. Fixed price, turn-key,
2. Wrap-around, subcontractor warranties

C. Guarantees, bonuses, penalties

D. Insurance, retainage

E. Construction schedule, penalties, damages

F. Performance testing
1. Output
2. Heat Rate
3. Availability
4. Duration of test, standards, derating
5. Warranty period

F. Start-up, training

IX. Operation and Maintenance

A. Operator qualifications

B. Contract:
1. Fixed,
2. Variable
3. Pass-through
4. Percent of revenues
5. Incentive, penalties

C. Coordination with power purchaser

D. Guarantees, financeability

E. Spares, parts delivery

X. Regulatory, legal
- A. Site control / right to develop / land use
  1. Property rights, Land law
  2. Collateral law, liens, security, foreclosure
  3. Title insurance
  4. Environmental liability
  5. Assignability
- B. Permitting: national, local, city
- C. Corporate compliance
  1. Government approval for local partner
  2. Foreign Corrupt Practices Act compliance
- D. Environmental compliance & impact
- E. Government agency involvement
  1. Environmental
  2. Foreign Investment
  3. Utility regulatory
- F. Implementation Agreement
  1. Full-blown IA
  2. Support letter

XI. Taxation
- A. National: corporate, JV, or partnership
- B. Depreciation treatment,
- C. Tax holidays
- C. Local, regional
- D. Value Added Tax
- E. Withholding taxes
- F. Tax treaties
- G. Other fees, levies, import duties, etc.

XII. Foreign Exchange
- A. Source of hard currency
- B. Country Creditworthiness, F/X reserves, balance of trade, PPP methodology
- C. Fluctuation of exchange rates, historical, projected
- D. Project reserves
- E. Repatriation
- F. Convertibility
- G. Risk management strategy
  1. Hedging
  2. Insurance

3. Hard currency payment

XIII. Insurance

A. During construction
1. Builder's all-risk policy
2. Property and casualty
3. Workers' compensation
4. Auto
5. construction/performance bond
6. Cost overrun/delay of completion
7. Project errors and Omissions

A. During Operation
1. Efficacy, business interruption
2. Property and casualty
3. Workers' compensation
4. Auto
5. Political risk, foreign exchange
6. Cost overrun/delay of completion
7. Project errors and Omissions

XIV. Financing

A. Development budget and source of funds
1. Tasks
2. Timing
3. Responsibility
4. Cost
5. Expectations of participants

B. Project description & documentation
C. Financial structure, equity contribution
D. Participants benefits, risks
E. Market research confirming financing strategy
F. Timetable

XV. Comprehensive risk analysis: technical or economic

A. Credit risks
1. Power Purchaser
2. Fuel Supplier
3. EPC contractor
4. Insurance company
5. O&M contractor

6. Guarantor

B. Construction risks
   1. Cost over-run
   2. Lateness
   3. Performance

C. Market and operating risks
   1. Revenue/Expense divergence
   2. Plant performance
   3. Excessive operating expense
   4. Off-taker performance
   5. Competition

D. Financial risks
   1. Interest rate risk
   2. Foreign exchange risk
   3. Inflation

E. Political risks
   1. Expropriation
   2. Change of law
      a. National
      b. State
      c. Tax-related
      d. Environmental

F. Legal risks
   1. Inadequate legal framework
      a. Legislation
      b. Case law
      c. Administrative law
      d. Regulation
   2. International, state, provincial jurisdiction

XVI. Dispute resolution
   A. Governing law
   B. Mediation
   C. Arbitration
   D. Track record in proposed country