Financial Management Issues in Infrastructure Projects In Africa

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1. Introduction to Project Financing
What is Project Finance?

Project Finance raises funds for independent projects and allows for limited recourse to project sponsors.

- **Limited recourse financing**
  - Debt raised to finance the project is secured only by the project company’s cashflows
  - The project is typically ring-fenced in a special purpose vehicle (the project company)
  - If the project is unable to meet its debt obligations, the lenders cannot pursue the sponsors for payment
    - Sponsors may need to provide some form of credit support until the asset is completed
      - Hence ‘limited recourse’ as opposed to ‘non-recourse’

- **Repayment based on project cashflows**
  - Project debt is serviced purely from project cashflow
  - Credit is driven by the project characteristics rather than the credit of the sponsors

- **Project risks allocated to parties best able to manage or mitigate them**
  - Rigorous risk management built into the project structure
  - ‘Web’ of contractual arrangements to allocate the risks among project parties
  - Risks assigned to the project company may vary with specific industries, country and other factors
Corporate Finance vs. Project Finance

Project finance is more complex than corporate finance. Focus is on the analysis of a single asset or a group of assets rather than on corporate analysis.

<table>
<thead>
<tr>
<th>Corporate Finance</th>
<th>Project Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Borrower</strong></td>
<td><strong>Borrower is special purpose project company</strong></td>
</tr>
<tr>
<td>- Borrower is typically sponsor parent company</td>
<td>- Collateral is the project itself</td>
</tr>
<tr>
<td>- Credit analysis of sponsor</td>
<td>- Cash flow is “king”</td>
</tr>
<tr>
<td>- Driven by company accounts</td>
<td></td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td><strong>Security</strong></td>
</tr>
<tr>
<td>- Charges over specific assets and assignment of contracts unnecessary</td>
<td>- Fixed and floating charges over project assets</td>
</tr>
<tr>
<td>- Security over sponsors’ shares in the project company</td>
<td>- Security over project accounts</td>
</tr>
<tr>
<td>- Security over project accounts</td>
<td>- Assignment of material contracts</td>
</tr>
<tr>
<td>- Assignment of material contracts</td>
<td></td>
</tr>
<tr>
<td><strong>Revenue Flow</strong></td>
<td><strong>Revenue is paid into project accounts</strong></td>
</tr>
<tr>
<td>- All revenues are paid directly into corporate accounts</td>
<td>- Cash flows cascade through a ‘cash waterfall’ of accounts to meet costs, debt service and reserves before it can be released to sponsors</td>
</tr>
<tr>
<td><strong>Covenants</strong></td>
<td><strong>Maintenance of debt service and loan life cover ratios</strong></td>
</tr>
<tr>
<td>- Negative pledge and standard corporate covenants</td>
<td>- Significant information requirement: Construction and operating reports, regular financial updates</td>
</tr>
<tr>
<td>- No additional indebtedness</td>
<td></td>
</tr>
<tr>
<td><strong>Distributions to Sponsors</strong></td>
<td><strong>Distributions allowed, subject to</strong></td>
</tr>
<tr>
<td>- No restrictions barring a default at sponsor (parent company) level</td>
<td>- Completion</td>
</tr>
<tr>
<td>- Completion</td>
<td>- Required reserve accounts filled</td>
</tr>
<tr>
<td></td>
<td>- Maintenance of cover ratios</td>
</tr>
<tr>
<td></td>
<td>- No events of default</td>
</tr>
</tbody>
</table>
Why Project Finance?

There are many reasons why project financing is an attractive financing option.

- **Limited recourse to the sponsors**
  - Lender recourse is only to the project, its cash flows and contracts
  - Provides sponsors with increased ability to finance large capital projects

- **Off-Balance sheet treatment**
  - Non-recourse debt often receives off-balance sheet treatment
  - Equity analysts often exclude project debt from gearing calculations of sponsor parent companies

- **Leverage**
  - High leverage available
  - Long tenors available compared to corporate debt
  - Robust risk allocation reduces return requirement for debt investors

- **Management of multi-sponsor issues**
  - Projects often too large for single sponsor
  - Mitigate exposure to other sponsors
Why Project Finance? (Cont’d)

There are many reasons why project financing is an attractive financing option.

- **Strong Market Appetite**
  - Suitable source of finance for new builds (“greenfield”) or expansion (“brownfield”) projects
  - There is significant appetite for project finance debt from banks, bond investors and Export Credit Agencies
  - Project finance is now relatively well-understood by the commercial bank market, resulting in much improved terms and pricing, compared to when project finance first emerged. Project bonds are also possible
  - Export Credit Agencies are improving their understanding, resulting in quicker and smoother ECA financings

- **Improve Financials?**
  - Higher leverage and longer tenors lead to higher equity returns for the sponsors – but higher financial risk
Why Project Finance is Not Always Appropriate

Project financing is not always the most appropriate form of financing.

- Asset viewed as too strategically important to allow lenders to enforce security over it
- Financing process more complex and requires more management time
- Covenants and reporting requirements under financing documentation reduce operational flexibility
- Financial engineering benefits not attainable in all circumstances
- Depending on final risk allocation, structured finance debt can be more expensive than corporate debt
Typical Projects

Project Financing structures can be applied to a wide variety of projects, each involving specific structural considerations that would need to be incorporated to mitigate the risks inherent to each sector.

**Industrials**
- Refineries/Petrochemicals
- Fertilisers
- Cement

**Power**
- IPPs
- Network

**Oil and Gas**
- Pipelines
- Gas/Oil field development

**Infrastructure**
- Toll roads
- Ports

**Telecoms**
- Mobile network

**Metals and Mining**
- Mine developments
- Aluminum smelters

**Transportation**
- Rail

**Transportation**
- Liquefaction plants
- Regasification terminals
- Vessels
2. Key Structuring Aspects
Basic Contractual Structure

The project company typically has contractual relationships with a range of parties. The ideal contractual structure places risks with those best able to manage them.
Contributions from Sponsors

Sponsors will be exposed to development risk and will commit their equity contribution to the project.

- Development costs
- Long-term investment commitments
- Contingent Commitments
- Voting rights, Board participation

Key Structuring Aspects

- Operator
- Operation and Management
- Sponsors and Other Investors
- Parent Company
- Authorisations, Permits, Termination Comp
- Licenses
- Engineering and Construction
- Licensors
- Construction Consortium
- Insurances
- Insurance Provider
- Loans
- Balance of Funds
- Service/Off-take
- Materials/Fuel/Feedstock
- Supplier
- Government
- Debt Service
- Escrow Agent
- Assignment of Sales Revenue
- Users/Off-takers
Contributions from Lenders

Lenders will advance the senior debt and will depend on project cash flows for debt service. Strong covenants and monitoring will apply.

- Full requirement committed
- Standby debt
- Limited recourse
- Security arrangements
- Covenants
- Isolate, allocate revenues

Key Structuring Aspects

1. Full requirement committed
2. Standby debt
3. Limited recourse
4. Security arrangements
5. Covenants
6. Isolate, allocate revenues
Contributions from Government

Lenders will advance the senior debt and will depend on project cash flows for debt service. Strong covenants and monitoring will apply.

- Long-term commitment
- Direct and indirect back-up support
- Political risk

Key Structuring Aspects

- Operator
- Sponsors and Other Investors
- Parent Company
- Licensors
- Licenses
- Engineering and Construction
- Insurances
- Construction Consortium
- Insurance Provider
- Supplier
- Materials/Fuel/Feedstock
- Service/Off-take
- Users/Off-takers
- Balance of Funds
- Assignment of Sales Revenue
- Loans
- Operation and Management
- Authorisations, Permits, Termination Comp
- Equity Subscription Agreement
- Project SPV
- Loan

10 Key Structuring Aspects
Contributions from Construction Consortium

Contractor ideally enters into a Lump Sum Turn Key construction contract, taking completion risk and exposure to liquidated damages for cost overruns and schedule delays.

- Proven technology
- Price commitment
- Schedule commitment
- Performance assurances
- Warranty
- Liquidated damages

Key Structuring Aspects

- Operator
- Sponsors and Other Investors
- Parent Company
- Licensor
- Construction Consortium
- Licenses
- Engineering and Construction
- Insurances
- Insurance Provider
- Supplier
- Materials/Fuel/Feedstock
- Users/Off-takers
- Service/Off-take
- Balance of Funds
- Loans
- Authorisations, Permits Termination Comp
- Government
- Lenders
- Debt Service
- Escrow Agent
- Assignment of Sales Revenue
- Equity Subscription Agreement
- Project SPV
Contributions from Users/Off-takers

A creditworthy off-taker ideally commits to buy a certain level of the product at a pre-agreed price.

- Creditworthy
- Long-term commitment
- Take-or-Pay
- Pricing
- Demand

Key Structuring Aspects

1. Operator
   - Operation and Management
2. Sponsors and Other Investors
   - Equity Subscription Agreement
3. Parent Company
   - Licenses
4. Government
   - Authorisations, Permits, Termination Comp.
5. Lenders
   - Loans
6. Debt Service
   - Balance of Funds
7. Escrow Agent
   - Assignment of Sales Revenue
8. Project SPV
   - Service/Off-take
9. Users/Off-takers
   - Sponsors and Other Investors
10. Licensors
   - Licenses
11. Construction Consortium
   - Insurance Provider
12. Supplier
   - Materials/Fuel/Feedstock
Contributions from Supplier(s)

A creditworthy supplier ideally commits to supply the raw material/fuel at a certain level with a pre-agreed price.

- Creditworthy
- Long-term commitment
- Supply-or-Pay
- Pricing
- Supply Level

Key Structuring Aspects

- Operator
- Sponsors and Other Investors
- Parent Company
- Licensor
- Authorisations, Permits, Termination Comp
- Loans
- Balance of Funds
- Service/Off-take
- Users/Off-takers
- Materials/Fuel/Feedstock
- Supplier

Project SPV

- Government
- Lenders
- Debt Service
- Escrow Agent
- Engineering and Construction
- Insurances
- Construction Consortium
- Insurance Provider

13 Key Structuring Aspects
Contributions from Operator(s)

A credit worthy and experience operator contracts with the project company to operate and maintain the asset at a certain standard and is incentivised with a bonus/penalty mechanism.

- Creditworthy
- Long-term contract
- Agreed O&M standards
- Bonus/Penalty
Contributions from Insurer(s)

Insurance providers provide coverage for certain customary events.

- Builder’s risk
- Business Interruption (BI)
- General liability
- Political risks

Key Structuring Aspects

Operation and Management

Sponsors and Other Investors

Parent Company

Equity Subscription Agreement

Licenses

Engineering and Construction

Insurances

Materials/Fuel/Feedstock

Project SPV

Governments

Borrowers

Debt Service

Escrow Agent

Operation and Management

Authorisations, Permits Termination Comp

Authorisation, Permits Termination Comp

Lenders

Loans

Government

Licensors

Construction Consortium

Insurance Provider

Suppliers

Conversion

Parent Company

Licenses

Engineering and Construction

Insurances

Materials/Fuel/Feedstock

Suppliers
### Basic Contractual Structure

Ideally project risks should be allocated to those parties which can control them best.

<table>
<thead>
<tr>
<th>Government</th>
<th>Project Company</th>
<th>Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right to Build</td>
<td>Demand</td>
<td>Construction Cost</td>
</tr>
<tr>
<td>Discriminatory Law</td>
<td>Force Majeure</td>
<td>Design</td>
</tr>
<tr>
<td>Title to Land</td>
<td>Other Approvals</td>
<td>Construction Time</td>
</tr>
<tr>
<td>Finance Risks</td>
<td>O&amp;M Performance</td>
<td>Latent Defects</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
<td>Ground Conditions</td>
<td>Safety</td>
</tr>
<tr>
<td>O&amp;M Performance</td>
<td>Residual Risks</td>
<td></td>
</tr>
</tbody>
</table>

**Risk allocated to Government by:**
Concession Agreement

**Risks allocated to Contractors by:**
Construction Contract O&M Contract

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16 Key Structuring Aspects
## Project Risks and Mitigants

<table>
<thead>
<tr>
<th>Risks</th>
<th>Main Mitigants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market Risk</strong></td>
<td></td>
</tr>
<tr>
<td>• Utilisation Risk</td>
<td>• Long-term Tolling Agreement(s) with</td>
</tr>
<tr>
<td>• Price risk</td>
<td>– Take-or-pay provisions covering fixed costs, including debt service</td>
</tr>
<tr>
<td></td>
<td>– Strong creditworthy experienced Tollers</td>
</tr>
<tr>
<td></td>
<td>– Mitigation of use-it-or-lose-it risk</td>
</tr>
<tr>
<td></td>
<td>• Market fundamentals</td>
</tr>
<tr>
<td></td>
<td>– Competitiveness of the project</td>
</tr>
<tr>
<td><strong>Political/Regulatory Risk</strong></td>
<td></td>
</tr>
<tr>
<td>• Unfavourable change in regulations</td>
<td>• Regulator’s track record</td>
</tr>
<tr>
<td>• Unfavourable change in law/taxes</td>
<td>• Regulatory framework stability</td>
</tr>
<tr>
<td><strong>Completion Risk</strong></td>
<td></td>
</tr>
<tr>
<td>• Site acquisition, permits/licences</td>
<td>• Main permits/licenses already obtained for this Project</td>
</tr>
<tr>
<td>• Construction costs overruns, delays</td>
<td>• Lump-sum turnkey EPC contract with</td>
</tr>
<tr>
<td>• Inadequate performance at completion</td>
<td>– Strong creditworthy and experienced EPC Contractor (Saipem)</td>
</tr>
<tr>
<td>• Force Majeure</td>
<td>– Appropriate LD levels</td>
</tr>
<tr>
<td>• Economic completion of the upstream and downstream supply chain</td>
<td>• Pre-Completion support</td>
</tr>
<tr>
<td></td>
<td>• Proven technology</td>
</tr>
<tr>
<td><strong>Operation Risk</strong></td>
<td></td>
</tr>
<tr>
<td>• Operation and maintenance</td>
<td>• Long-term O&amp;M agreement with experienced party</td>
</tr>
<tr>
<td>• Cost overruns</td>
<td>• Experienced secondees/staff within the Project Company</td>
</tr>
<tr>
<td></td>
<td>• Alignment of interest among Sponsors/Lenders</td>
</tr>
<tr>
<td><strong>Macro-economic Risk</strong></td>
<td></td>
</tr>
<tr>
<td>• Interest Rate, Exchange Rate</td>
<td>• Hedging</td>
</tr>
<tr>
<td>• Inflation</td>
<td>• Financing/Revenues/Cost matching</td>
</tr>
<tr>
<td></td>
<td>• Payments indexation mechanism</td>
</tr>
<tr>
<td><strong>Force Majeure</strong></td>
<td></td>
</tr>
<tr>
<td>• Natural FM (acts of God, etc.)</td>
<td>• Insurance</td>
</tr>
<tr>
<td>• Political FM (strikes, war, etc.)</td>
<td>• Political and regulatory stability</td>
</tr>
</tbody>
</table>
Various risks are allocated to different parties throughout the life of the project.

### Development
- Technical feasibility
- Commercial/financial feasibility
- Project economics
- Permits/authorisation
- Third-party intervention
- Political change

### Construction
- Completion
- Schedule
- Cost
- Design changes
- Interest rate escalation
- Consequential damages
- Force majeure/country risk
- Currency changes
- Availability of foreign exchange

### Operations
- Market changes
- Capacity/production shortfalls
- Fuel/materials supply interruption and cost escalation
- Operating and maintenance cost/escalation
- Interest rate escalation
- Currency depreciation
- Statutory change/civil unrest/strikes
- Natural disasters
- Third-party liability
- Residual value

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**Key Structuring Aspects**

- **Risk**
  - Sponsor Risk
  - Contractor Risk
  - Lender Risk
  - Host Government/off-taker risk
The bankability of the project will depend on the strength of key contractual terms. The important issues that commonly arise in the main contracts are presented below.

### Engineering, Procurement and Construction (EPC)
- Price, technology and timetable
- Liquidated damages
- Reputation and track record

### Off-take
- Take-or-pay obligations/Demand analysis
- Credit rating of off-taker
- Price certainty and reference price indices
- Length of contract

### Operations and Maintenance (O&M)
- Performance standards
- Bonus/penalty regime
- Length of contract

### Government Consents/Concessions and Licenses
- Central and local government levels
- Strength of explicit and implicit support
Role of Financial Management

Financial management is critical in the processes of Project implementation and execution. Parties to the project will need to address and have comfort that the execution process is done within project parameters established at initiation.

1. Project Tasks - Financial Management*
   - Implement (monitor progress, risks, quality changes)
   - Evaluate
   - Report (internally/externally)
   - Communicate (internally/externally)

2. Project Implementation*
   - Planned Implementation
   - Actual Implementation
   - Activities outside scope: to be avoided

Financial Management critical to project success:
- Initiation: Feasibility analysis, budget preparation, forecast analysis, stress testing, returns assessment, capital structuring, project costing, equity and debt contributions
- Execution: Costs management, reporting, audit, conditions precedent, variations/alterations, cost over-run assessment, timetable, funding availability/drawdown
- Completion: Final reporting, validation, certification, conditions subsequent, reps and warranties
- Operation: Management and Audit reporting, covenant tracking

* Source: Project management handbook, Interact/European Regional Development Fund
3. Key Financing Aspects
Project SPV
- Project financings are usually undertaken by a project company established as an SPV (unincorporated joint venture)

Off-shore Account
- Payments are made according to a pre-determined cashflow waterfall

Security Interest
- Non-recourse: Lenders assigned ring-fenced assets, related accounts and contracts. No recourse to sponsor’s balance sheet
- Limited-recourse: Lenders benefit from the security package above plus limited recourse to sponsor’s balance sheet e.g. completion guarantees

Basic Finance Structure

The basic financing structure has three key elements; the asset, lenders and the SPV

Key Financing Aspects
Key Financing Terms

There are several key terms and conditions in project finance transactions that may differ from a corporate borrowing structure.

Security
- Lenders will require a comprehensive first ranking security package including fixed and floating charges over project assets and accounts, insurance policies, project contracts and the shares in the project company.

Interest Rate
- The margin over LIBOR will often be stepped:
  - Higher during construction (assuming no completion guarantees)
  - Lower post-completion
  - Stepping up through the operating period (many projects refinance at this point)

Project Accounts
- Lenders will expect the project company to maintain a number of project accounts including, at a minimum, Debt Service Reserve and Off-shore Revenue Account.
- Some of these accounts are Reserve Accounts – cash held for contingency:
  - The Debt Service Reserve Account typically holds a sum equal to the next six months of debt service to provide short-term stability in the event of one-off cash shortfalls.
  - Other reserve accounts lenders may require include CapEx Reserve Account, Maintenance Reserve Account, Change of Law Account.
- The need for these will be dictated by the sector, country and aggressiveness of other terms.
Key Financing Terms (Cont’d)

Generally speaking, lenders will require greater control over activities of the project company and greater transparency regarding information.

Key Covenants

- **Additional Financial Indebtedness**
  - The project company may be prevented from incurring any additional financial indebtedness (other than under existing documents, guarantees or agreements) without the prior unanimous consent of the lenders
    - It is sometimes possible to pre-agree certain amounts of additional indebtedness based on ratio tests and ranking

- **Distributions to Shareholders**
  - Distributions are usually not allowed prior to the first repayment date and during operations only if certain ratio tests are met
  - Distributions would also be prevented when an Event of Default (and sometimes Potential Event of Default) occurs

- **Change of Control**
  - Lenders may prohibit the project’s shareholders from transferring their interests for a certain period (usually until construction is completed)
    - It is possible to negotiate a pre-agreed list of criteria for “permitted transferees”

- **Events of Default**
  - Events of Default include non-payment of debt service, material breach of a project contract and, in the case of a greenfield project, failure to complete by a certain date
Key Financing Terms (Cont’d)

The conditions precedent can be fairly extensive, which can introduce execution risk if the process is poorly managed.

- Information
  - Lenders expect to receive quarterly updates on construction progress pre-completion, as well as quarterly or semi-annual financial information throughout the life of the loan
  - Lenders may require some information from sponsors

- Insurance
  - The project company will be required to maintain cover as agreed with the lenders and provide copies of the documentation to lenders

Conditions Precedent

- Execution of material agreements with creditworthy parties (off-take, concession agreements, etc.)
- All necessary environmental approvals obtained from the relevant government authorities
- Planning permissions and permits have been achieved
- Audited financial model showing satisfactory cover ratios under agreed base case assumptions
- Satisfactory legal, technical and insurance due diligence reports
4. Sources of Finance
Sources of Financing

Sources of funds comprise both external funds from senior and junior sources and revenues during the operating period.

- **Senior Funding**
  - Bond Debt
  - Export Credit Agencies
  - Development Banks

- **Junior Funding**
  - Mezzanine Debt (If Applicable)
  - Equity

- **Government**
  - Construction Grant

- **Revenues**
  - Pre-completion Revenues
  - Post-completion Revenues
  - Other Revenues

- **Operation**
  - Possible Refinancing
  - Availability Payments
## Typical Sources of Senior Debt Finance

There is a wide range of senior debt sources available for the project finance market.

<table>
<thead>
<tr>
<th>Commercial Bank Debt</th>
<th>Private Placement</th>
<th>Islamic Funding</th>
<th>ECA Covered Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲ Strong track record</td>
<td>▲ Buy and hold investors</td>
<td>▲ Large regional investor pool</td>
<td>▲ Local currency available</td>
</tr>
<tr>
<td>▲ Flexible drawdowns and prepayment</td>
<td>▲ Flexible terms/long tenors</td>
<td>▲ May improve pricing</td>
<td>▲ Plenty of appetite available</td>
</tr>
<tr>
<td>▲ Usually no rating required</td>
<td>▲ Rating requirement can be avoided</td>
<td>▲ Diversify investor base</td>
<td>▲ Up to 100% cover maybe available</td>
</tr>
<tr>
<td>▼ Tighter control</td>
<td>▲ May be index-linked</td>
<td>▼ Short tenor appetite</td>
<td>▼ Long tenors may be difficult</td>
</tr>
<tr>
<td>▼ Tighter covenant package</td>
<td>▼ Limited market capacity</td>
<td>▼ Financing likely to be on tied basis</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multilateral Debt</th>
<th>Debt Capital Markets</th>
<th>Credit Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲ Long tenors possible</td>
<td>▲ Long average life</td>
<td>• Monoline insurers or multi-lateral may wrap bond</td>
</tr>
<tr>
<td>▲ Very attractive pricing</td>
<td>▲ Generally cheaper than bank debt</td>
<td>▲ Increased certainty of bond financing, plus widened investor base, improved pricing and tenors</td>
</tr>
<tr>
<td>▲ May be index linked</td>
<td>▲ May be index linked</td>
<td>▲ Increased flexibility – monoline is sole counterparty</td>
</tr>
<tr>
<td>▼ Bank/Monoline guarantee may be required</td>
<td>▼ Rating required</td>
<td>▲ Investment grade rating required</td>
</tr>
<tr>
<td>▼ More complex process</td>
<td>▼ Cost of carry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▼ Market risk</td>
<td></td>
</tr>
</tbody>
</table>
5. Critical Success Factors/Reasons for Failure
Keys to Project Success

There must be a compelling need for the project and strong fundamentals. Predictable cost and secure demand are critical.

Projects are Successful Due to a No. of Key Factors

- Compelling need for project and strong fundamentals
  - Credible consultants perform extensive due diligence
  - Particular scrutiny applied to any uncontrollable factors e.g. ultimate demand for the product

- Proven technology
  - Technical failure can severely delay completion
  - Problems during operation may cause significant financial damage
  - New technologies are not impossible to project finance but require far more due diligence

- Supply agreement and cost competitiveness
  - Low cost production particularly important if the project company takes demand risk
  - Successful projects are frequently regional monopolies/duopolies
  - Sponsors should be aware of other upcoming projects offering same service/product

- Off-take agreement or attractive markets exist for product
  - There is an established market or demonstrable future market for the product (assuming the project company will take demand risk)
  - The sponsors/off-takers should have strong channels to those markets as appropriate
Keys to Project Success (Cont’d)

A credible operator of the asset is essential. Favourable environment and acceptable macroeconomics conditions play an important role.

Projects are Successful Due to a No. of Key Factors (Cont’d)

- Sponsor group
  - Clear alignment of interests
  - Mix of local and international players ideal
  - Adequate ROE reflecting strong underlying economics

- Realistic objectives
  - Reliable contractor/operator
  - Experience of contractor/operator in similar projects – track record gives lenders comfort
  - Capacity and credit of contractor/operator – the contract should not be unduly large in relation to the contracting entities such that they may have difficulty paying liquidated damages if necessary

- Acceptable sovereign risk
  - Realistic attitude of government towards credit support if necessary
  - Political Risk Insurance (PRI) availability
  - Some countries may be more difficult due to unpredictable regimes or international economic sanctions

- Mitigated currency and FX risks
  - Appropriate hedging or swaps in place to protect lenders

- Adequate insurance coverage
  - Sufficient cover driven by due diligence and sensitivities
  - Limited exposure to [uninsureable] risks
Reasons for Project Failure

Political interference remains the dominant cause of project finance failure.

Projects can Fail Due to a No. of Key Reasons

- Government interference
- Delay in completion with consequential increase in capital costs and delay in expected revenue flow
- Capital cost overrun
- Technical failure
- Increased price or shortage of raw materials
- Loss of competitive position in the market place
- Decline in product demand and prices
- Poor management
- Uninsured losses
Appendix 1 – Sector Specific Considerations
Power Generation

Power generation is the largest user of project finance globally (although much of this is in the US). Proven technology and secure supply/off-take arrangements are key.

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Structural Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Supply</td>
<td>- The project needs to have a secure fuel source for the duration of the project debt</td>
</tr>
</tbody>
</table>
|                          |  - Supplier’s source should be proven (for oil and gas)  
|                          |  - Supplier should be credit worthy    
|                          |  - Supply should be agreed under a long-term contract, with supply or pay provisions                                                                |
| Fuel Prices              | - The project is vulnerable to fluctuations in fuel price to the extent it is not directly related to electricity sale price                            |
|                          |  - Fuel prices are typically subject to a long-term contracted price structure  
|                          |  - Output electricity sale price may be agreed as a function of the fuel price  
|                          |  - Tolling arrangements possible                                                                                                                     |
| Electricity Off-take      | - Lenders are now reluctant to take merchant risk                                                                                                       |
|                          |  - Lenders require comfort that the electricity can always be sold at a sufficient volume and price to service the debt                                |
|                          |  - The project should have a long-term contract to supply the electric utility or other user (off-take contract)                                        |
|                          |  - If most or all of the plant’s output is intended for a single user, e.g. an aluminium smelter, then the plant would typically be financed alongside the user as a single project |
| Construction/Technology  | - Power is technology-intensive sector, with associated completion and business interruption risk                                                       |
|                          |  - EPC contractor and operator should be sufficiently experienced and creditworthy                                                                    |
|                          |  - Lump Sum Turn Key contract to mitigate completion risk with liquidated damages for delay and cost                                                    |
|                          |  - Proven technology produced by a major equipment manufacturer                                                                                       |
|                          |  - Liquidated damages payable under the EPC contract should be sufficient to cover losses to the project caused by technological failure (subject to a cap to be agreed) |
| Non-Fossil Generation    | - Solar, wind, biomass and other renewable sources are typically more expensive per MW than fossil fuel plants. Consequently, projects usually receive benefit from local or global green initiatives |
|                          |  - Tax credit in the US  
|                          |  - Grants and credit certificates in Europe  
|                          |  - Depending on the source of subsidy, particular structural features may be required  

Appendix 1 – Sector Specific Considerations
Reserve based lending is an established form of financing in up-stream oil and gas.

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Structural Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and Gas Price</td>
<td>• Key determinant of debt size and leverage</td>
</tr>
<tr>
<td></td>
<td>• Oil price hedging can be tailored to the specific needs of the sponsor</td>
</tr>
<tr>
<td></td>
<td>• Gas price hedging requires recognised reference price indices in gas price formula</td>
</tr>
<tr>
<td>Reserves</td>
<td>• Main source of cash flow and loan collateral</td>
</tr>
<tr>
<td></td>
<td>• Lenders will require reserve due diligence from an independent consultant</td>
</tr>
<tr>
<td>Production Profile</td>
<td>• Key determinant of debt size and leverage</td>
</tr>
<tr>
<td></td>
<td>• Field life often determines debt tenor</td>
</tr>
<tr>
<td></td>
<td>• P90 production profiles typically used in single field development financing</td>
</tr>
<tr>
<td></td>
<td>• P50 production profiles typically used in development financing for a portfolio of fields</td>
</tr>
<tr>
<td>Security Package</td>
<td>• Lenders prefer to have the most comprehensive security possible over field licenses, agreements, contracts, assets and accounts</td>
</tr>
<tr>
<td></td>
<td>• However, lenders can get comfortable with incomplete security packages</td>
</tr>
<tr>
<td></td>
<td>– Assignment of license may not be legally possible</td>
</tr>
<tr>
<td></td>
<td>– JV arrangements can make assignment of assets unworkable</td>
</tr>
</tbody>
</table>
Midstream and Downstream Oil and Gas

Oil and gas value chains may have many stages (e.g. gas production – gas liquefaction – LNG shipping – LNG regasification – gas distribution) and the entire chain is important to the project.

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Structural Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedstock Supply</td>
<td>• The project needs to have a secure feedstock source for the duration of the project debt</td>
</tr>
<tr>
<td></td>
<td>– Supplier’s source should be proven</td>
</tr>
<tr>
<td></td>
<td>– Supplier should be creditworthy</td>
</tr>
<tr>
<td></td>
<td>– Supplier may also be a sponsor of the project company</td>
</tr>
<tr>
<td></td>
<td>• Supply should be agreed under a long-term contract, with supply or pay provisions</td>
</tr>
<tr>
<td>Feedstock Prices</td>
<td>• The price structure needs to mitigate the risk of an adverse discrepancy between feedstock and off-take prices</td>
</tr>
<tr>
<td></td>
<td>– Feedstock prices are typically subject to long-term contract</td>
</tr>
<tr>
<td></td>
<td>– Off-take price structure will typically mirror the feedstock price structure (generally a function of oil prices)</td>
</tr>
<tr>
<td></td>
<td>– Project company may be a toller between the supplier and off-taker, taking only availability risk</td>
</tr>
<tr>
<td>Off-take</td>
<td>• Lenders are not generally comfortable with merchant/spot risk for LNG, as there is no liquid market</td>
</tr>
<tr>
<td></td>
<td>– Long-term off-take agreements with creditworthy off-takers</td>
</tr>
<tr>
<td></td>
<td>– Off-takers are sometimes the project sponsors</td>
</tr>
<tr>
<td></td>
<td>– The off-taker target market and any further transportation (e.g. shipping) must be sound</td>
</tr>
<tr>
<td></td>
<td>• Traded commodities such as crude oil can be subject to merchant/spot risk</td>
</tr>
<tr>
<td>Environmental/Social</td>
<td>• Particularly prone to environmental/social issues. Oil and gas installations are at risk from leakage and potentially explosion. Furthermore, siting may require displacement of local people</td>
</tr>
<tr>
<td></td>
<td>• Extensive environmental/social management and due diligence required</td>
</tr>
<tr>
<td></td>
<td>• Clear roles and responsibilities for the project parties are required with regard to these issues</td>
</tr>
</tbody>
</table>
Telecom Infrastructure

Demand risk is the key factor in the telecoms sector. The project company will generally take full demand risk so the target market should be well understood.

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Structural Implications</th>
</tr>
</thead>
</table>
| **Regulation** | • Telecoms are nearly always regulated  
                 • There are currently many telecom projects in emerging telecoms markets such as Latin America, Africa and the Middle East. New regulators may not be independent and may be untested, given the embryonic state of the market they are regulating  
                 • The project company's relationship with the regulator will be an important contributor to the credit |
| **Licensing**  | • Most jurisdictions require a substantial license fee, which may represent a significant proportion of the project funding requirement  
                 • The project should secure and maintain the necessary licenses, having established that the cost does not cause excessive deterioration of the project economics and credit |
| **Demand Risk**| • Developed telecom markets  
                    – Need to establish that market is not saturated or that sufficient market share can be achieved  
                    • Emerging telecom markets  
                    – Need to establish that the macroeconomics support the business case  
                    – Need to establish there is existing demand or demonstrable future demand not currently met  
                    – Need to establish that the project will achieve and maintain market share as the market develops  
                    • Demand risk will usually be taken in full by the project company. This means telecom projects tend to be at the riskier end of the project finance spectrum and thus leverage will be lower and pricing higher than in other sectors |
| **Equipment**  | • Telecoms is a technology-intensive sector; equipment failure may cause business interruption and reputational damage with consumers  
                 • The project’s equipment may need to be integrated with existing network infrastructure  
                 • The equipment provider and installer should be sufficiently experienced |
Transport Infrastructure

Rail, particularly passenger rail, tends to require government subsidy. Airports, ports and roads may be entirely privately financed in some cases.

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Structural Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Support</td>
<td>• Transport projects are generally capital intensive and the end user is often not prepared to pay the economic price for use of the service</td>
</tr>
<tr>
<td></td>
<td>– Government subsidy may be required on a one-off basis for construction and expansion</td>
</tr>
<tr>
<td></td>
<td>– In some cases annual subsidy will be required to operate the service as well</td>
</tr>
<tr>
<td></td>
<td>– Government is therefore likely to be a key stakeholder in the project and will expect a certain amount of control as a result</td>
</tr>
<tr>
<td>Regulation</td>
<td>• Transport projects are often heavily regulated as they tend to have a degree of monopoly states</td>
</tr>
<tr>
<td></td>
<td>• The project may be restricted in its pricing and/or returns e.g. airport single/dual till systems</td>
</tr>
<tr>
<td>Demand Risk</td>
<td>• Various models exist for the assignment of demand risk; the project company may take full traffic risk or be paid by a government entity on an availability basis</td>
</tr>
<tr>
<td></td>
<td>– Availability structures allow higher leverage but lower equity returns; however this leaves government with full demand risk for the project</td>
</tr>
<tr>
<td></td>
<td>– Demand-risk structures allow full upside but also subject the lenders to substantial downside risk, which will be reflected in the leverage available. Robust traffic studies and sensitivities will be required. Demand-risk structures require the end-user to pay for the service directly, which may be a political issue in some countries (e.g. toll roads unpopular in the UK)</td>
</tr>
<tr>
<td></td>
<td>– Intermediate ‘shadow-toll’ structures are also possible, where the project company is paid by a government entity according to agreed bands of usage, thus sharing the risk between government and the project company</td>
</tr>
<tr>
<td>Construction Risk</td>
<td>• Transport projects are typically capital intensive</td>
</tr>
<tr>
<td></td>
<td>• Transport projects tend to be unique (e.g. landscape and geology for road/rail projects), which makes transport more prone than other sectors to the risk of construction overruns</td>
</tr>
<tr>
<td></td>
<td>• It is particularly important that there is a robust EPC contract. Government may also take some aspects of the risk e.g. delay caused by permits, planning permissions, etc.</td>
</tr>
</tbody>
</table>
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Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.

efficiency, renewable energy and mitigation