Financing large scale Greenfield ports

Project financing & value engineering

19 maart, 2015
Agenda

Introduction MTBS

Project Financing

Project Financing for Greenfield Port Projects & Value Engineering

Project cost markups
MTBS is a leading international port consultant...

- Specialized in port PPP projects
- A strong global portfolio, with a focus on the EMEA region
that offers services based on a model with four core competences.

- Consultancy services, focused on financial and strategic aspects
- The importance of financial structuring of a project for successful implementation ("Financing" quadrant)
Agenda

1. Introduction MTBS
2. Project Financing
3. Project Financing for Greenfield Port Projects & Value Engineering
4. Project cost markups
Financing projects: balance sheet financing and project financing.

<table>
<thead>
<tr>
<th>Balance sheet financing</th>
<th>Project financing</th>
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</thead>
<tbody>
<tr>
<td>Sovereign (guaranteed) loan</td>
<td></td>
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<tr>
<td>Government bonds</td>
<td></td>
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<tr>
<td>IFI lending</td>
<td></td>
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<tr>
<td>ECA covered commercial loan</td>
<td></td>
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<tr>
<td>State guaranteed public entity loan</td>
<td></td>
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<tr>
<td>Implicitly state guaranteed public entity loan</td>
<td></td>
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<tr>
<td>Corporate bonds</td>
<td></td>
</tr>
<tr>
<td>Private placements</td>
<td></td>
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<tr>
<td>Commercial loan</td>
<td></td>
</tr>
<tr>
<td>IFI / DFI loan</td>
<td></td>
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<tr>
<td>ECA covered commercial loan</td>
<td></td>
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<tr>
<td>Rarely applied</td>
<td></td>
</tr>
<tr>
<td>Commercial loan</td>
<td></td>
</tr>
<tr>
<td>IFI / DFI loan</td>
<td></td>
</tr>
<tr>
<td>ECA covered commercial loan</td>
<td></td>
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<tr>
<td>Project bonds</td>
<td></td>
</tr>
<tr>
<td>Non (or limited) recourse loan</td>
<td></td>
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</tbody>
</table>
Project financing follows a different process than corporate financing...

- **Corporate finance:**
  - Loan is provided on the company balance
  - Debt is usually recourse to entire organization’s assets
  - Leverage is usually modest (obvious exceptions)

- **Project finance:**
  - A project is established as a separate company (SPC or SPV)
  - Loan is provided on SPC’s cash flows
  - Debt is non-recourse (or limited recourse) to SPC’s shareholders
  - High leverage (can be up to 90%, if market risk is excluded)
  - PF is used in infrastructure project, which can be seen as a stand-alone project
  - A concession contract is usually the main asset
  - The project company enters into comprehensive contractual arrangements with suppliers, customers
  - Both a financial structure and a corporate governance structure aimed efficiently allocating risk
and is used for five main reasons.

- Preserve debt capacity
- Carry out a project too big for one sponsor
- Share the risk (or lay it off)
- At times the risk of the project may be perceived to be lower than the risk of the sovereign
- Financiers do not accept construction risk (stemming from delays and budget overruns)
Parties with different interests in the project are brought together...

- Sponsor(s) / shareholders
  - promote the project and bring parties together;
  - are equity providers and sometimes also debt providers or guarantors;
  - are often involved in specific aspects of project.
- Contractor
- Equipment suppliers
- Operator
- Input supplier
- Output buyer
- Independent engineer
- Insurance consultant
  - Political
  - Other
- Legal counsel
- Marketing consultant
- Financial Advisor
  - Independent vs investment bank
  - Can be financial arranger
- Borrower (SPC)
- Government

All parties have the same goal > successfully carrying out the project. However, the parties have varying priorities and responsibilities.
and the contractual agreements between these parties safeguard the SPV from risks.
Level of risks greatly varies among different types of projects.

<table>
<thead>
<tr>
<th>Type of project</th>
<th>Level of risks</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil tankers / ore carriers</td>
<td>Low</td>
<td>• Short construction period</td>
</tr>
<tr>
<td>Oil rigs</td>
<td></td>
<td>• Clear offtake agreement</td>
</tr>
<tr>
<td>Conventional pipelines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Fields</td>
<td></td>
<td>• Geological issues</td>
</tr>
<tr>
<td>Mines</td>
<td></td>
<td>• Probable vs. proofed reserves</td>
</tr>
<tr>
<td>Power plants</td>
<td></td>
<td>• More political</td>
</tr>
<tr>
<td>Hydroelectric plants</td>
<td></td>
<td>• Hydroelectric more complex</td>
</tr>
<tr>
<td>Oil refineries</td>
<td></td>
<td>• Hard currency</td>
</tr>
<tr>
<td>Petrochemical plants</td>
<td></td>
<td>• Technically complex</td>
</tr>
<tr>
<td>Metal processing</td>
<td></td>
<td>• Huge marketing analysis</td>
</tr>
<tr>
<td>Telecommunications projects</td>
<td></td>
<td>• Telecom: Earlier ones were good, Next generations more difficult</td>
</tr>
<tr>
<td>Toll roads &amp; mass transit systems</td>
<td></td>
<td>• Market risks</td>
</tr>
<tr>
<td>Water distribution &amp; sanitation</td>
<td>High</td>
<td>• No enforceability of revenues from households</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Better works service agreement</td>
</tr>
</tbody>
</table>
Greenfield port projects inherently possess higher levels of risk, compared to many other types of projects.

- The following table shows a few reasons why Greenfield port developments are less bankable than renewable energy projects.

<table>
<thead>
<tr>
<th>Type of risk</th>
<th>Renewable energy (solar or wind)</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>• Equipment is imported and ready to use</td>
<td>• Multiple years construction period: long and risky period before revenues start</td>
</tr>
<tr>
<td></td>
<td>• Installation only half a year</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Immediately full capacity</td>
<td></td>
</tr>
<tr>
<td>Funding requirement</td>
<td>• Approximately USD 200m per project</td>
<td>• Often in excess of USD 500m (taking into account all investments: dredging, quay wall, equipment etc.)</td>
</tr>
<tr>
<td>(preferably (USD50m-500m))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>• Off-take agreement, often for full production capacity</td>
<td>• Ramp-up period: low revenues in first years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Difficult to obtain throughput guarantees</td>
</tr>
</tbody>
</table>

- Still, port development projects are often financially viable due to the high tariffs and severe capacity deficit in Africa. Cases as Doloreh (Djibouti), Pipavav (India), Maputo (Mozambique) show that it is possible to realise a project finance solution for port developments. Especially in Nigeria various projects are being developed on a project finance basis. Long term securities on cargo throughput and existing operations (i.e. brownfield projects) improve the access to project finance.

- The most critical phase in a project finance structure concerns the pre-operational period. During this period, in which the port is being constructed, banks will require comprehensive guarantees to the loan. Only after the project has proven for a period that it is able perform operations and generate revenues as predicted, the project financing could become non-recourse.
The project’s cash flows are central to financing of the project

• Importance of cash flow:
  • Cash flow is central to project finance
  • The entire debt of the project is repaid from the project’s own cash flows
  • Strength of cash flow determines debt capacity of the project

• Amount of debt and repayment profile is a function of the quantity and timing of free cash flow
  Free cash flow (available for debt service) =
  net operational cash flow after tax
  less working capital investments
  less capital expenditure

• Creditor measurements
  • DSCR: Debt Service Cover Ratio
  • (N)PV Coverage: PV(Future FCF, @interest rate) / PV (Book) Debt
  • LOLR: Life of Loan Ratio: PV(Future FCF during loan life; @interest rate) / PV (Book) Debt
However, there are three main challenges with financing cash flows of a large scale Greenfield port...

- Magnitude of the funding requirement
- Duration and risks associated with construction period (here: first three years)
- Ramp-up period for revenues leads to long pay-back period
that elicit use of innovative repayment schemes.

- Linear repayment not realistic in project finance
- For major infrastructure projects a long term repayment schedule is needed
- Better to have annuity or sculpted
Additionally, various project structures may be employed...

- What level of investments can a privately funded port manager (and developer) carry?
to further increase bankability of projects.

- DSCR is the limiting factor for the amount of debt; consequently, leverage can be increased as more investments are allocated to the government.
- Investor aims for a leverage of at least 65% debt (35% equity)

<table>
<thead>
<tr>
<th></th>
<th>Full BOT</th>
<th>Medium BOT</th>
<th>BOT Light</th>
</tr>
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<tbody>
<tr>
<td>IRR</td>
<td>16.7%</td>
<td>17.8%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Payback</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Conc Fee</td>
<td>N/A</td>
<td>336</td>
<td>599</td>
</tr>
<tr>
<td>Gearing (%)</td>
<td>33%</td>
<td>48%</td>
<td>62</td>
</tr>
<tr>
<td>DSCR</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>RoE</td>
<td>17.5</td>
<td>19.5</td>
<td>20.4</td>
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<td>17.5</td>
<td>19.5</td>
<td>20.4</td>
</tr>
</tbody>
</table>

- Loan
- Equity Outlay (2020)
Within the confines of the project, further value engineering can be achieved through freedom in scoping...

- The scoping margin leads to easier bankability of a project, as the minimum scope requires less initial investments.

<table>
<thead>
<tr>
<th></th>
<th>Minimum Scope</th>
<th>Reference Design</th>
<th>Maximum Scope</th>
<th>2035 Master Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Container Terminal</strong></td>
<td>350m</td>
<td>350m</td>
<td>...</td>
<td>700m</td>
</tr>
<tr>
<td><strong>Breakbulk/RoRo Terminal</strong></td>
<td>250m</td>
<td>250m</td>
<td>...</td>
<td>750m</td>
</tr>
<tr>
<td><strong>Offshore Supply Base</strong></td>
<td>400m</td>
<td>400m</td>
<td>400m</td>
<td>400m</td>
</tr>
<tr>
<td><strong>Dry Bulk Terminal</strong></td>
<td>0m</td>
<td>0m</td>
<td>...</td>
<td>300m</td>
</tr>
<tr>
<td><strong>Liquid Bulk Terminal – Jetty</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Liquid Bulk Terminal – Tank Farm</strong></td>
<td>0.4M m3</td>
<td>0.4M m3</td>
<td>...</td>
<td>0.8M m3</td>
</tr>
<tr>
<td><strong>Free Trade Zone</strong></td>
<td>100ha</td>
<td>100ha</td>
<td>100ha</td>
<td>100ha</td>
</tr>
<tr>
<td><strong>Design Vessel Draft</strong></td>
<td>13.5m</td>
<td>15.0m</td>
<td>15.0m</td>
<td>15.0m</td>
</tr>
<tr>
<td><strong>Capex – Infrastructure (USD ‘13)</strong></td>
<td>1,071</td>
<td>1,171</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex – Superstructure (USD ‘13)</strong></td>
<td>266</td>
<td>266</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex – Equipment (USD ‘13)</strong></td>
<td>305</td>
<td>305</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex – Fleet (USD ‘13)</strong></td>
<td>18</td>
<td>18</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex Estimate – Project (USD ‘13)</strong></td>
<td>1,660</td>
<td>1,760</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex Estimate – PDMC (USD ‘13)</strong></td>
<td>1,642</td>
<td>1,742</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Capex Estimate – NPA (USD ‘13)</strong></td>
<td>18</td>
<td>18</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Private Investment in PDMC: 60%</strong></td>
<td>986</td>
<td>1,046</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>NPA Investment in PDMC: 20%</strong></td>
<td>328</td>
<td>348</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>STATE Investment in PDMC: 20%</strong></td>
<td>328</td>
<td>348</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Total Public Contribution to PDMC</strong></td>
<td>656</td>
<td>696</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

The table above shows the committed public contribution range from the project. The range includes various components such as infrastructure, superstructure, equipment, and fleet investment, along with different scopes for different terminals and facilities. The table also includes estimates for the project and PDMC investment, private and NPA investments, and a state investment. The committed public contribution range is crucial for the bankability of the project, as it ensures that the project is financially viable and sustainable.
Spreading CAPEX over separate phases can positively affect feasibility and bankability of a project - despite repeated mobilization costs.

Phasing can be applied to several project components, for example:
- length of the breakwater;
- port capacity;
- width and depth of the access channel.

Phasing of the Kribi Greenfield Port Project - Cameroon
Example – the base case for a large scale Greenfield port is not feasible.

- Base case scenario leads to a -700 million USD NPV, at a WACC of 16%
Value engineering creates a feasible business case, by improving the NPV by 800 million USD

- Narrowing of project scope leads to lower land acquisition and construction costs, and shortens the construction period
- Optimized phasing of the project further decreases initial CAPEX
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Project Financing

Project Financing for Greenfield Port Projects & Value Engineering

Project cost markups
For project value and bankability calculations, CAPEX estimates should be as low as realistically possible.

- **Project Value**
  - Estimated project value in financial modelling is based on the expected Cash Flows and the WACC (Weighted Average Cost of Capital)
  - The WACC incorporates project risk

- **Bankability**
  - Bankability of a project is affected by initial CAPEX estimates
  - For bankability calculations, these CAPEX estimates should be as low as possible, while remaining realistic
So what about the impact of risk mark-ups on project value and bankability?

Example – Ibom Deep Sea Port Nigeria

- In early stages of project assessment, risk mark-ups are added to CAPEX costing, in order to incorporate uncertainties in the project.
- Uncertainties diminish as surveys and studies regarding the project progress; consequently, risk mark-ups also decrease accordingly.

For the Ibom Deep Sea Port, early stage mark-ups amounted to:
- 30% for marine and construction works;
- 25% for infrastructure works; and
- 20% for terminal infrastructure and equipment.

These percentages coincide with 1.00 – 1.64 SD (Standard Deviation) from the mean value. Hence, there is a 5 – 15% chance of exceedance of budgeted costs.
thank you for your attention

maritime & transport business solutions
maritime strategy & finance advisors

<table>
<thead>
<tr>
<th>t</th>
<th>+31 10 2865940</th>
<th>Wijnhaven 3E</th>
</tr>
</thead>
<tbody>
<tr>
<td>e</td>
<td><a href="mailto:info@mtbs.nl">info@mtbs.nl</a></td>
<td>P.O. Box 601</td>
</tr>
<tr>
<td>w</td>
<td><a href="http://www.mtbs.nl">www.mtbs.nl</a></td>
<td>3000 AP Rotterdam</td>
</tr>
</tbody>
</table>

White House, Rotterdam