Introduction to Project Finance

ENERGY 203:

Energy Transformation Collaborative

David B. Rogers

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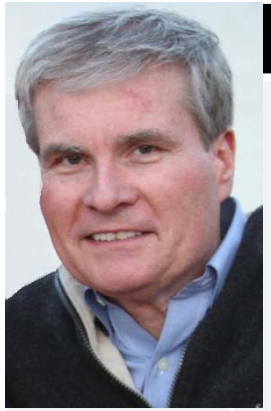
Instructor Profile



David B. Rogers

Co-instructor Clean Energy Project Development and Finance, Stanford, 2015-2019

Guest Lecturer, International Infrastructure Finance, Oxford Saïd Business School, 2018-2020

Latham & Watkins LLP (30 years)

- Chair, Global Project Finance Group age 34
- Chair, Global Finance Department (project finance, leveraged finance, banking, real estate, municipal finance and structured finance) age 38
- Member 5-person global Executive Committee

AB Economics Stanford University
JD Stanford Law School

Project Finance – Working Definitions

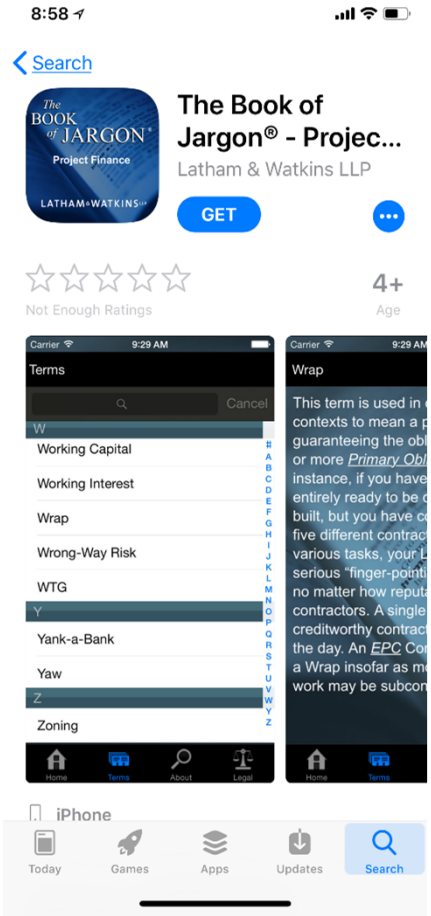
"Project finance involves the creation of a largely independent project company financed with equity from one or more sponsoring firms and non-recourse debt for the purpose of investing in a capital asset"

"A form of specialised financing that relies on the assets of a 'ring fenced' project and the future cash flows that those assets produce as the sole source of debt repayment"

Not project finance

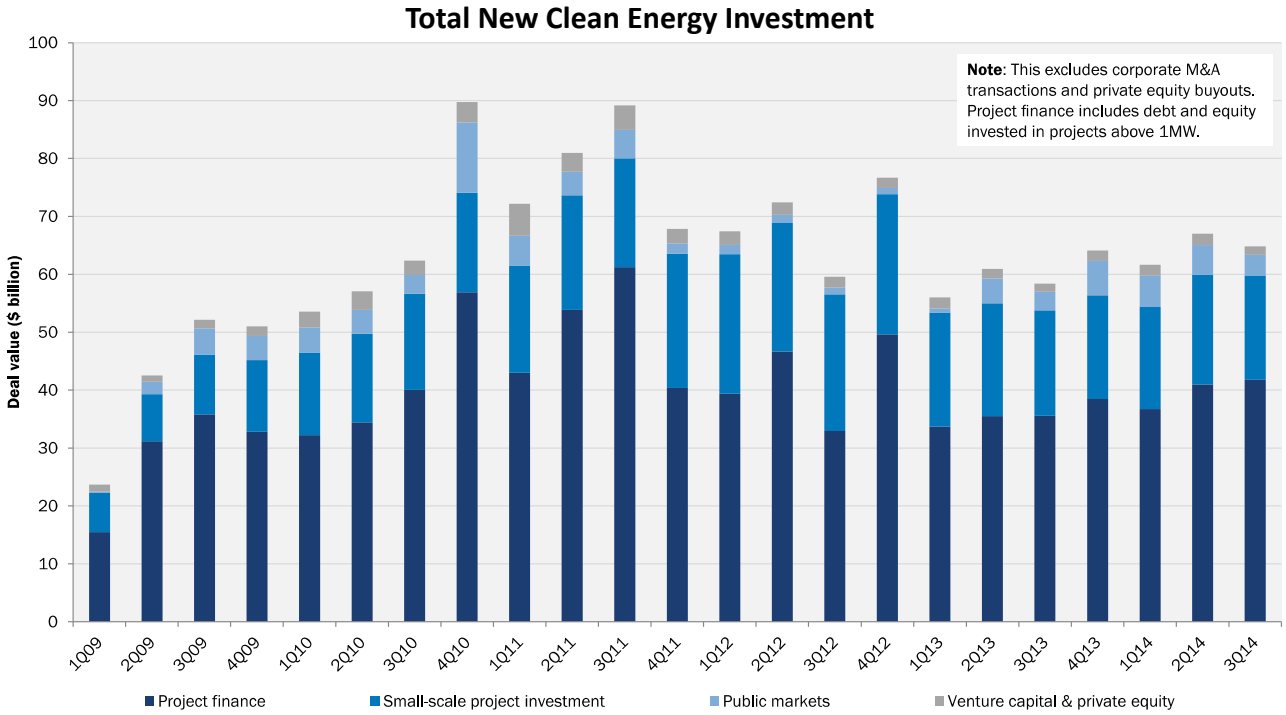
"The interns are learning how to value a unicorn today, Frank — they have each licked a finger and are holding it in the air to see which way the wind is blowing. They will then think of a number and add a sprinkling of zeros." Nicholas Leonard and Helen Cochrane

Project Finance Terms



App of project finance terms available free of charge at iTunes and Android Store

What needs to get financed?



- *$44 trillion* global investment required by 2050 *just to develop a low carbon economy* (IEA)
- *PLUS* huge needs in other sectors: water, sanitation, health, transportation, minerals etc.
- Project finance will play a significant role

Why COST of capital is almost as important as AMOUNT of capital

For any proposed capital program or new technology:

- If it does not scale, it does not matter.
- If it is not economic, it will not scale.
- If it requires capital investment, but does not have a path forward to attracting low cost capital, it very likely won't be economic.

So, finding the path forward to low cost capital is often difficult, but will be the key factor in achieving success at scale.

What is low cost capital?

The all-in cost of the entire capital stack. Compare:

Favorable	Unfavorable
• Lots of debt leverage	• Less debt leverage
• Lower interest margins	• Higher interest margins
• Longer maturities	• Shorter maturities
• Slower amortization	• Quicker amortization
• Lower targeted equity returns	• Higher targeted equity returns

An example: large fleet of LNG carriers

NAKILAT ناقلات

- Senior secured debt facilities with commercial banks for up to US$2.2 billion
- Subordinated secured debt facilities with commercial banks for up to US$175 million
- Senior secured bonds due 2033 for US$850 million (rated Aa3 by Moody's, A+ by S&P, and A+ by Fitch)
- Subordinated secured bonds due 2033 for US$300 million (rated A1 by Moody's, A- by S&P, and A- by Fitch)
- Senior secured debt facility with the Export-Import Bank of Korea (KEXIM) for up to US$500 million
- Senior secured debt facility with a syndicate of commercial banks insured under a Korea Export Insurance Corporation (KEIC) insurance guarantee for up to US$225 million.

An example: large fleet of LNG carriers

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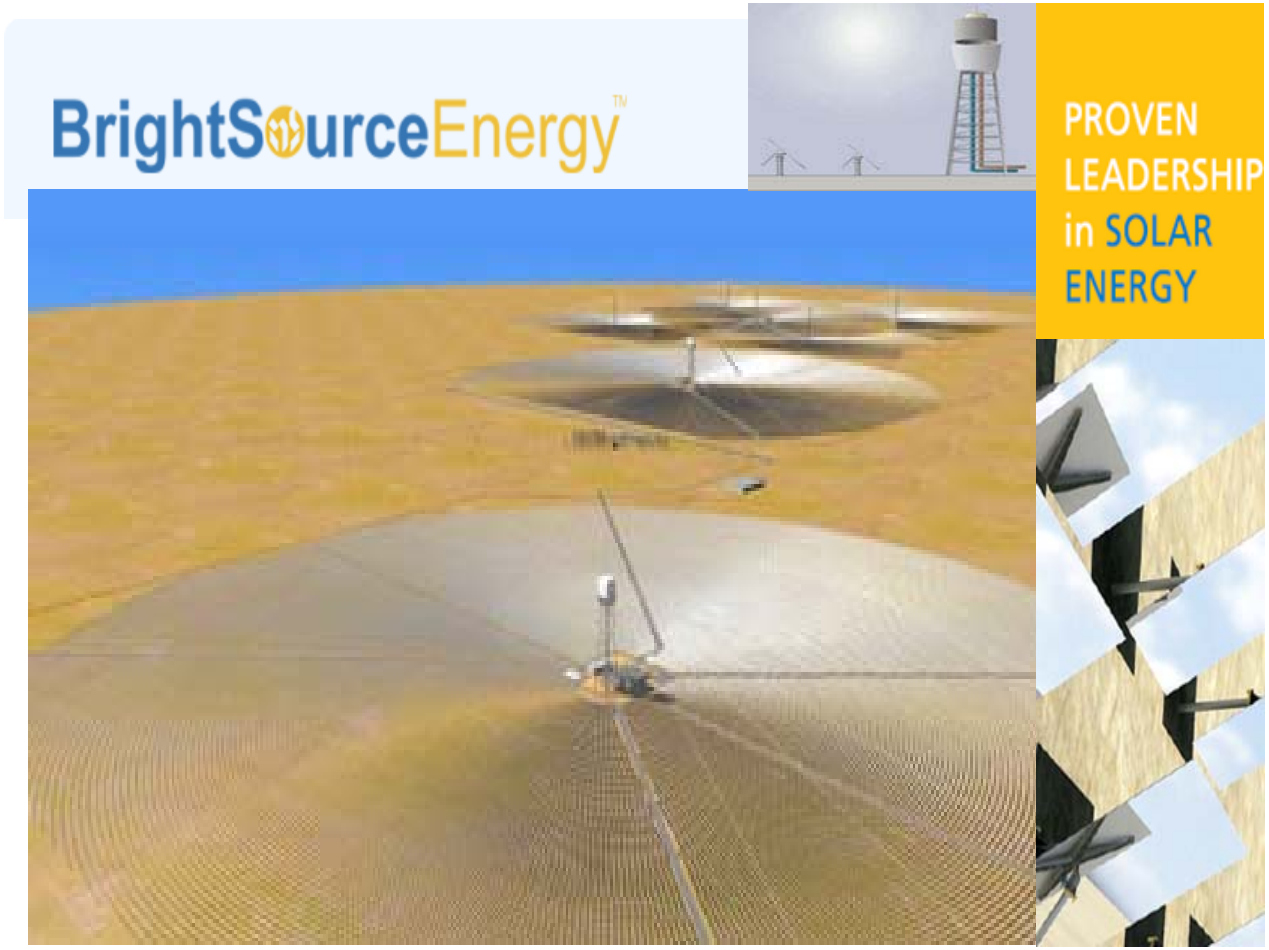
Complex Documentation

High Transactions Costs

Inexpensive Capital

Counterpoint: A large VC funding



VC financing – $110 million equity.

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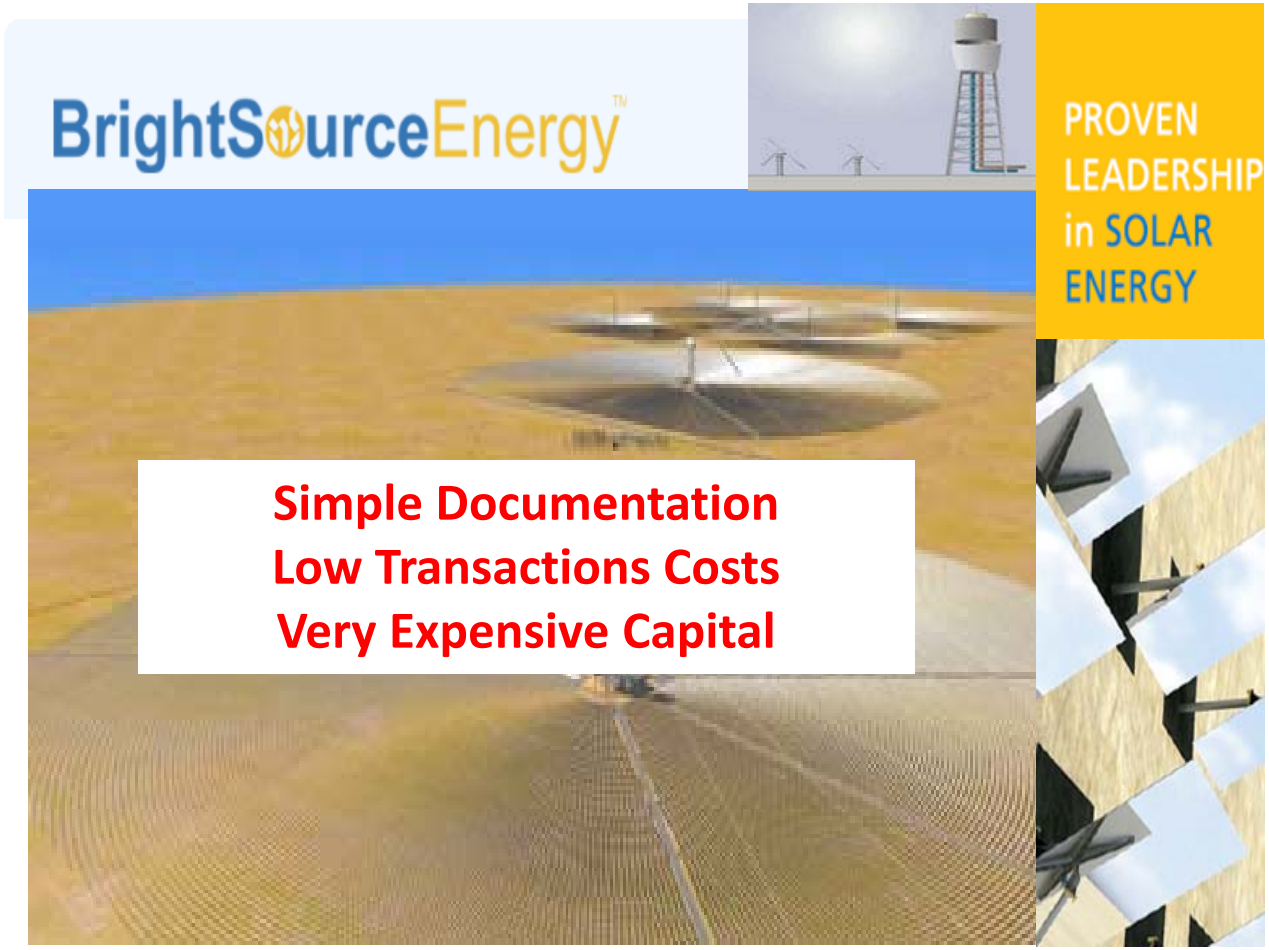
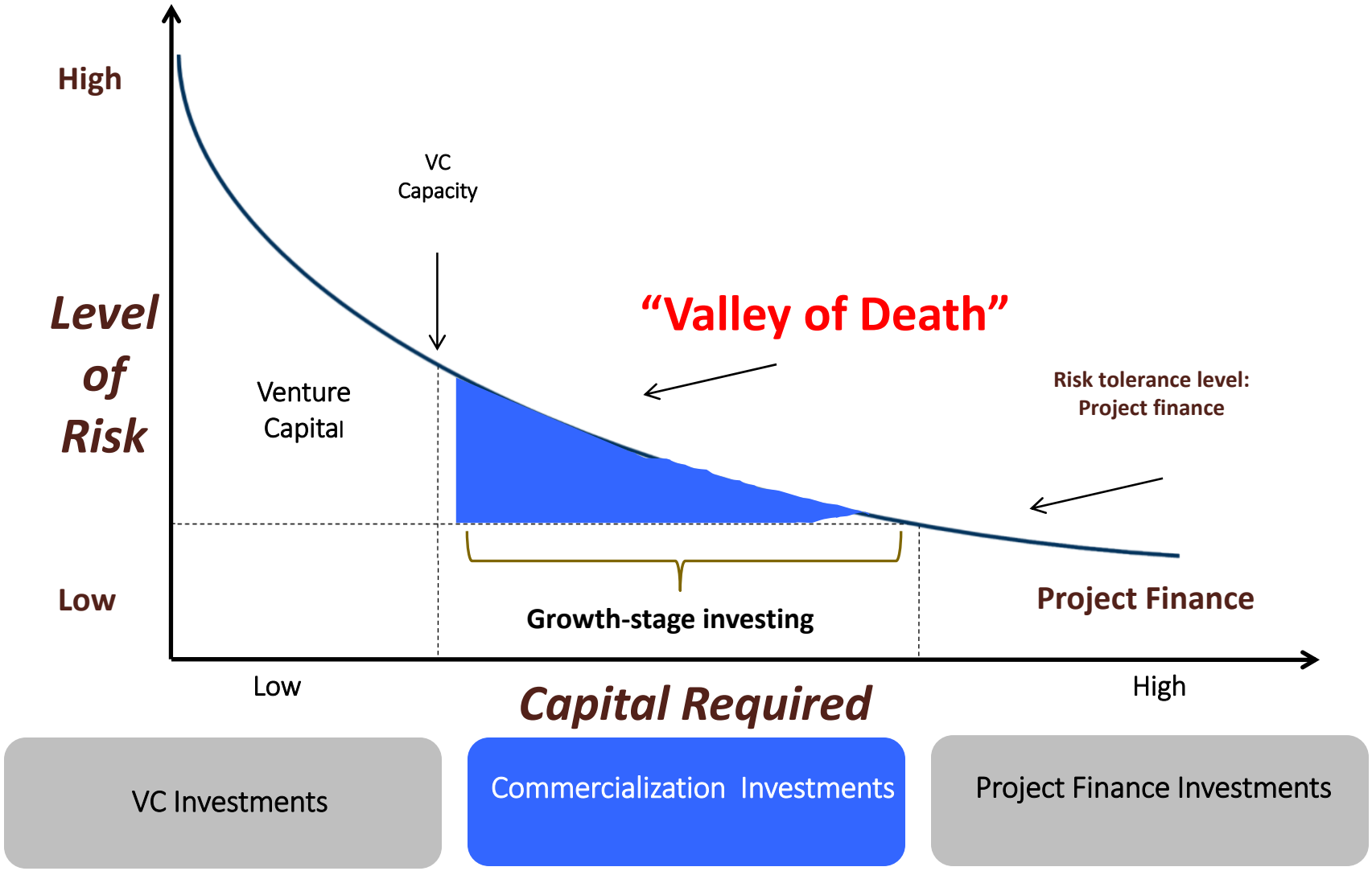


VC financing – $110 million equity.

Commercialization: Risk versus Capital



Graph Source: Tana Energy Capital LLC

Who uses project finance markets?

Three major users of this market:

1. Independent companies *challenging incumbents* (e.g. regulated investor owned utilities) with newer, often greener technology

   → Must use PF

2. Large, asset-heavy companies that are trying to *minimize direct, on balance-sheet credit exposures* in order to preserve their investment grade credit ratings

   → Need to use PF if they possibly can

3. Large, highly-rated companies in Joint Ventures who want:
   a) to keep the debt of the J.V. off their individual balance sheets and;
   b) to clearly define the limits of each J.V. member's exposure to the project.

   → Using PF for convenience and good corporate hygiene

30-second case study

- The year is 1994…

The Country

A small country with significant undeveloped natural gas resources

Economic Indicators:

- Population: 0.495 million
- GDP (PPP): US$ 27 billion
- GDP per Capita (PPP): US$ 55,291
- GDP Growth (current prices, national currency): 1.419%

The Project

- Financial Close achieved on a large project finance transaction
- Greenfield project to process and export Liquefied Natural Gas (“LNG”)
- Project cost: US$2.3 billion
- LNG sold under long term contracts to international buyers – mainly Japan
- Shareholders: National Oil Company / ExxonMobil / Total / Mitsui / Marubeni
- Funded by Japanese Export Credit Agency and largely Japanese banks

Source: Economy Watch / Hydrocarbons Technology

30-second case study –contd.

- Qatar in 2014…

Economic Indicators:

- Population: 2.238 million
- GDP (PPP): US$ 323 billion
- GDP per Capita (PPP): US$ 144,427
- GDP Growth (current prices, national currency): 6.528%

The world's highest per capita income country

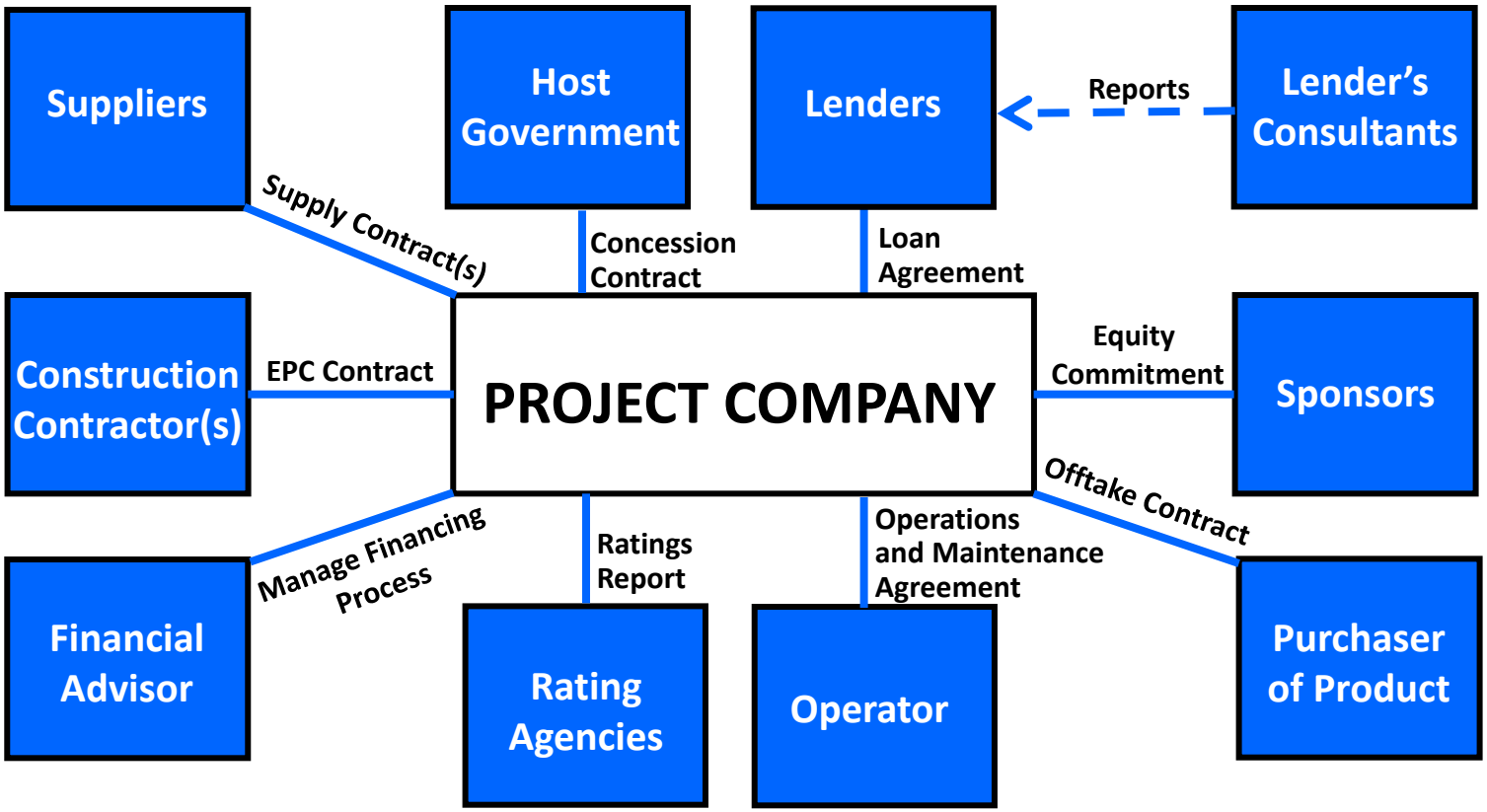
- The world's largest exporter of LNG
- The world's second largest exporter of natural gas
- Economic development driven by series of greenfield LNG projects:
  - *QatarGas 1*
  - RasGas
  - Qatargas 2
  - RasGas 2
  - QatarGas 3
  - QatarGas 4

Source: Economy Watch, BP 2014 Statistical review of World Energy

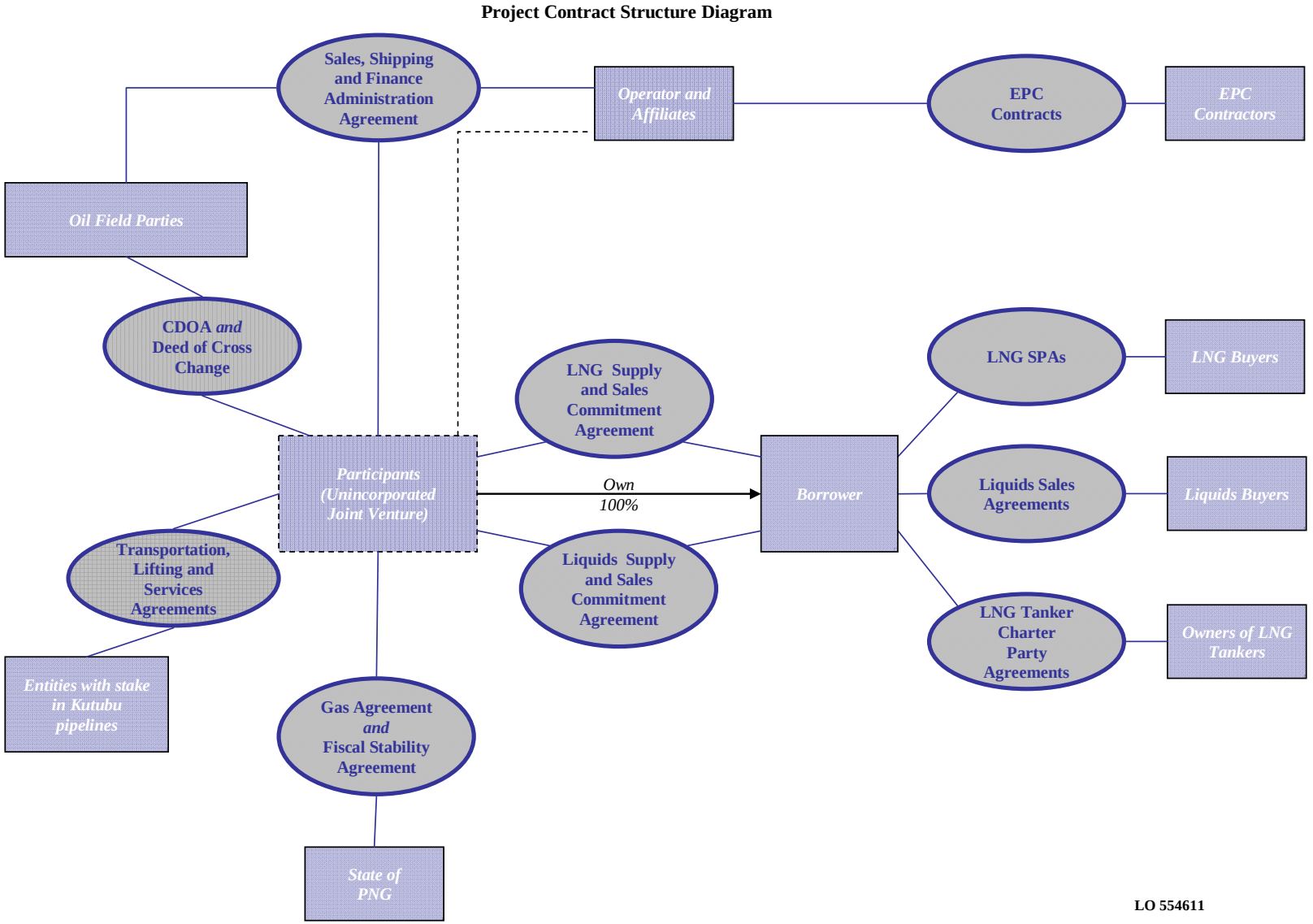
Who Owns the Country?

Cross border needs and challenges

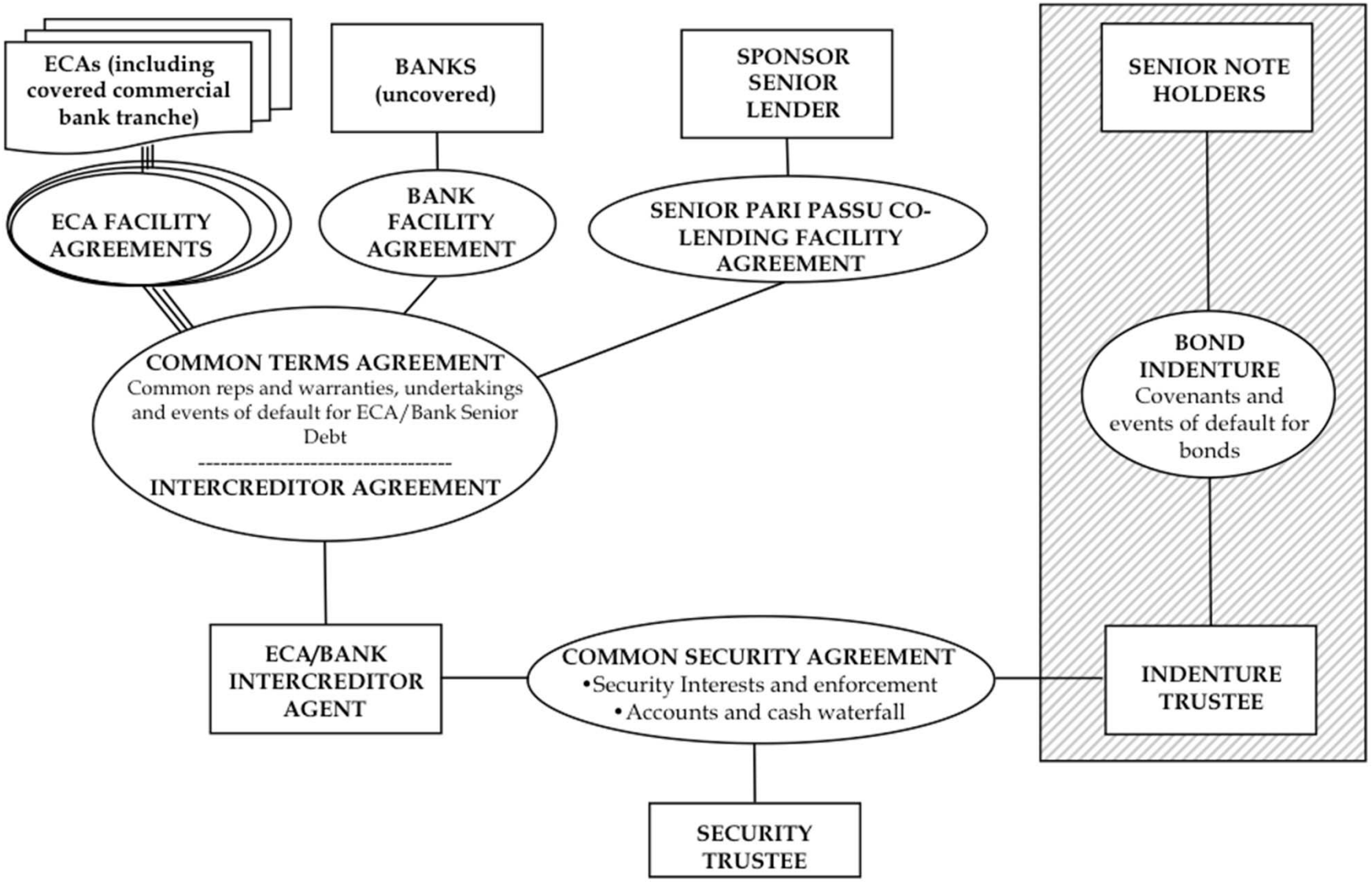
What does a project financing structure look like?



Example Project Contract Structure



Example Finance Documentation Structure



Developing a financeable project is about thoughtful and complete risk allocation

- Identifying and allocating risks are at the *heart of project financing*
- Each risk *must* be addressed and allocated to some party to the transaction—an intricate process
- The ability of the project company to absorb risks is limited, so *most risks get addressed by a contract to some project participant*
- Lenders are willing to finance a project with only certain types of risks
  - Lenders get a *lien* on everything (project assets and contracts, equity in the project company) but their *first line of defense is making sure that the project is strong*. Foreclosure—particularly on a deficient project—is not attractive

Examples of Key Project Risks

1. Feasibility study and reserve analysis
2. Construction
   - Multiple contracts, difficult countries
3. Operation
4. Commercial
   - Price fluctuation, volatility of cash flow
5. Political
6. Legal

The evolution of a project

Phase	Assessment	Development	Financial Closing	Construction	Term Financing	Operations
Time Scale	1 year →	1-3 years →	1 year →	1-4 years →	½ year →	20 years
What Happens	Figure out if project makes sense.	Get all permits. Get all contracts. Mitigate risks enough to satisfy lenders and equity.	Lock down all debt & equity – usually close simultaneously. Provide all funds needed to pay for construction and early operation – plus fund to cover delays or cost overruns.	Draw down committed funding to build the project. Supervise contractors.	Get project working well enough so that long-term, permanent financing can be put in place.	Run the project: enforcing all input/output contracts; avoiding defaults on loans, and; paying dividends to equity.

Why might learning project finance be relevant to you?

Some successes