Masterclass
Energy Asset Project Finance
8 June 2021
Agenda

- Introduction
- Energy Transition and Energy Finance - Csinszka
- Energy Asset Project Finance - Leon
- Case studies - Denisa
- Q & A
- Closing
Energy Investment Management BV

*Investment Management & Advisory Boutique with focus on*

*Energy Transition Assets and Cleantech Ventures*

**Advisory**
Advisory services related to investments in energy industry assets and cleantech ventures: development, transactions and implementation

**Thought Leadership**
We show and create leadership in investment management in energy transition assets and cleantech ventures with organizing and participating in: research projects, programs, networks and events

**Investments**
We invest ourselves with our private investor network in energy transition assets and cleantech ventures. We structure investment portfolios, develop fund structures and participation concepts
Program

East-European Energy Transition Entrepreneurial Opportunities Program

Research Erasmus University

Enlit Europe

Master-classes ...

Research ...

Research VU Amsterdam

EU SEW

East European Knowledge Team

Cooperation Energy Community

... 

Multi Media Eastern Europe
Masterclass Series Energy Investment Management

Energy Transition
Regulatory Framework development

Energy Business Portfolio Strategy

Energy Asset Development
Energy Asset Project Finance
Energy Asset Transactions

Cleantech Start-up Development
Investment Management Cleantech Start-ups
Growth Capital Cleantech Companies
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Global electricity generation mix

Source: BloombergNEF, IEA
Figure 39. Financing Continuum

- Technology research
- Technology development
- Manufacturing scale-up
- Roll-out [asset finance]
- Acquisitions, refinancing

Key:
- Process
- Funding

Global Trends in Renewable Energy Investment 2020,
Frankfurt School-UNEP Centre/BNEF, 2020,
 FIGURE 41. GLOBAL TRANSACTIONS IN RENEWABLE ENERGY, 2019, $BN

SDC = small distributed capacity. Total values include estimates for undisclosed deals. Figures may not add up exactly to totals, due to rounding.
Source: UNEP, Frankfurt School-UNEP Centre, BloombergNEF
Total values include estimates for undisclosed deals.
Source: UNEP, Frankfurt School-UNEP Centre, BloombergNEF
FIGURE 57. ACQUISITION TRANSACTIONS IN RENEWABLE ENERGY BY SECTOR, 2004-2019, $BN

Total values include estimates for undisclosed deals.
Source: UNEP, Frankfurt School-UNEP Centre, BloombergNEF
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Learning the asset development and financing language

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>SPC</td>
<td>Special Purpose Company (legal entity)</td>
</tr>
<tr>
<td>DSCR</td>
<td>Debt Service Cover Ratio</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>FID</td>
<td>Financial Investment Decision</td>
</tr>
<tr>
<td>BOD</td>
<td>Basis of design</td>
</tr>
<tr>
<td>ISBL</td>
<td>Inside Battery Limit (within the site)</td>
</tr>
<tr>
<td>OSBL</td>
<td>Outside Battery Limit</td>
</tr>
<tr>
<td>PPA</td>
<td>Power Purchase Agreement</td>
</tr>
<tr>
<td>VAR</td>
<td>Value Assurance Review (Value at Risk)</td>
</tr>
<tr>
<td>TAR</td>
<td>Technology Assurance Review</td>
</tr>
<tr>
<td>HSE</td>
<td>Health Safety Environment</td>
</tr>
<tr>
<td>EPC</td>
<td>Engineering Procurement Construction</td>
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</tbody>
</table>

Definition **project finance**

A financial structure where lenders have recourse primarily to the revenue-stream of the project or asset they are financing, rather than to the balance sheet of the sponsors.
Comparison with other financing types

Balance sheet Finance
The lending decision is based on the overall corporate balance sheet. The cash flow and assets of the company are relied upon by the lender as basis for servicing the additional debt necessary to develop, construct and operate the project and to collateralize the loan.

Asset-Based Finance
An asset-based financing is founded on the value of the assets financed. In a project financing, the hard assets probably would not produce sufficient cash in foreclosure sale to justify the value of an asset-based loan.
Energy Asset Classes
Structuring of an energy asset in a SPC

- **Investor**
  - Equity
  - Development
  - Engineering, Procurement & Construction (EPC)
  - Operation & Maintenance (O&M)

- **Utility**
  - PPA

- **Authorities**
  - Permits
  - Tax Incentives

- **Landowners**
  - Land contract

- **Others** (roads, water)
  - Services

- **SPC administration**
  - Loan agreement
  - Insurance
  - Feed-in Subsidy

- **Grid owner**
  - Grid Connection

- **Bank**
  - Insurance Co.
  - Utility / Authority
Six phases can be distinguished in the project lifecycle:

**Portfolio strategy and Business Planning**: Select relevant activities for organization based on the long term strategy and scope.

**Feasibility**: Assess leads on their feasibility (identify show-stoppers).

**Scoping**: Select and optimize business opportunities.

**Definition**: Define, negotiate and finalize contracts.

**Realization**: Realization of the project (including commissioning).

**Operational**: Operational management of asset.
Capital layers in project finance structure

- **Senior Debt**: 70% Capex
- **Mixed**: 10% Capex
- **Mezzanine**: Preferred Equity
- **Junior Debt**:
- **Equity**: 20% Capex

Security > Risk

Size = weight in capital structure

Required Return
Financiers count only the project revenues

Challenges of financiers:
project generates insufficient cash-flow during project life cycle:

• Project cost for development, realization and operations
• Cash flow available for debt service (interest, debt repayment)
• Return on equity

Give confidence:
Insights in mitigation measures for risks that limit project revenues!
Different financiers, different requirements

### Debt providers
- Requirements: project revenues > Interest + Debt repayment
- Main criteria: a minimum level of ‘Debt Service Cover Ratio’ (DSCR): operational cash flow available / interest + debt repayment

### Equity providers
- Requirements: Project life time > Loan life time (‘tail’)
- Main criteria: Internal Rate of Return (IRR) on equity
Financial modelling

FUNDING
From Business Case to:
• Investor Search
• Fund & Direct Investments

BUSINESS CASE
From Investor Requirements to
• Financial Optimisation
• Risk versus Return
From Cash Flow to
• Financial Structure
• Organisation and Governance

PROJECT DEFINITION
• From Need / Opportunity to Plan
• From Plan to Cash Flow

Investors
(debt, equity, mezzanine)

Project Vehicle
Financial Structure

Business Plan

EXPENDITURE
REVENUES

Capital Expenditure
Operational Expenditure

Revenues

project cash flow
FAST Modelling Standard

• Set of rules on the structure and detailed design of spreadsheet-based models.

• Developed through the collaborative participation of professional financial modellers across the globe.

• Organised in FAST Standards Organization Limited, established to own, maintain and further develop the Standard, under the guidance of a Moderation Board.

  Flexible, adaptable and allow users to run scenarios and sensitivities

  Accurate, reflect key business assumptions directly and faithfully without unnecessary detail

  Structured, consistency in model layout and organisation

  Transparent, simple and clear formulas

• http://www.fast-standard.org/
• http://info.f1f9.com/31-day-financial-modelling-course
Different financiers may target different positions at different stages in the capital structure of a renewable energy project dependent on their experience and risk appetite.
Value creation during project development RE project

Value curve

Commercial project

Final Investment Decision (FID)

Cost curve

Costs X M€ (2 – 5 % Capex)

Opportunity optimized

Viable project

Tangible project

No show stoppers
Realistic opportunity

Opportunity identified

Project identified

Opportunity identified

Project identified

Identification

Feasibility

GATE 1

Scoping

GATE 2

Definition

GATE 3

Time

Y M€
Different project stages – different financiers

Pre-development
- Pre-developer sets up SPC

Development
- 1st investor buy SPC (~70% developed)

Realisation
- 2nd investor buys SPC (fin. close)

Operations
- 3rd investor buys SPC (12-18mths)

Type 1 investor:
- Family office
- Entrepreneur
- Intermediary
- Fund
- Bank

Type 2 investor:
- Type 1 investor stays in
- Intermediary
- Fund
- Bank

Type 3 investor:
- 2nd investor stays
- Pension fund
- Strategic investor
- Fund

Construction risk:
- High infra IRRs (10-15%)

Project duration:
- Construction ~4-8 mths
- Operation ~1-3 yrs

Operating risk:
- Low infra IRRs (8-11%)

Operating risk:
- Operation ~17-24 yrs

Development/pipeline risk:
- Private Equity IRRs (20-30%)

Project duration:
- Development 6-18 mths (avg 12)
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Hydropower project Albania - Risk Assessment

Hydropower project

- Location: Albania – remote area
- Capex: 30 Million Euro
- DD Client: EBRD
- Timing: financial close next month
- Technology supplier: Andritz and local partner
- Potential landslides
- Local community expects local benefits
Due diligence team - Risk Assessment

Hydropower Project
Due diligence team - Risk Assessment

Hydropower Project

Risk

Mitigation

Risk

Mitigation

Risk

Mitigation

Risk

Mitigation

Risk

Mitigation
Due diligence team – Risks & mitigation measures

- Identify project risks from an investor point of view
  - Risks regarding completion
  - ...
  - ...

- Identify mitigation measures
  Mitigation measures for completion risks
  - Turnkey contract with liquidated damages (penalties, bonds)
  - Contingency reserve account
  - Definition of ‘completion’
16 categories of risks:

- Operating (technical, cost, management)
- Completion
- Supply
- Market
- Infrastructure
- Environmental
- Participant
- Political
- Force Majeure
- Foreign Exchange
- Engineering
- Syndication
- Funding/Interest
- Legal
Due diligence team – Risks & mitigation measures

• Legal risks
  • Enforceability contract clauses
  • Restrictions on foreign ownership and control
  • Change of law or policy

• Market
  • Power purchase agreement → off take risk
  • Take and-pay contracts vs Take-or pay contracts (“Come hell or high water clause”)

• Political (citizen opposition)
  • Requirement of local participation
  • Requirement of local formation of a project company
Wind energy project Ukraine

Structure risk entity (‘legal infra’)
(Robustness of contracts with partners, fiscality)

INVESTOR

EQUITY

Construction risk (‘completion risk’)
(Lead time, financial strength contractors, grid connection)

Development

Engineering, Procurement & Construction (EPC)

Operational / Availability risk
(Operation & Maintenance (O&M)
(Wind revenues, selection turbine, maintenance)

Grid Owner

Financial risks
• Inflation, interest, fiscality
• Currency risk: investment in currency X vs. revenues in currency Y

Offtake risk
(tariff (E price), contract period, contract party)

Utility

PPA

Permits

Tax incentives

Land

Contract

Loan agreement

Insurance

Feed-In/Subsidy

Bank

Insurance Co.

Utility/Authority

Others (roads, water)

Services

Regulatory risk
(nat. policy; Subsidy)

Authorities

Environmental risk
(citizen participation, permits, discussions, landlords, compensation plan)

Land Owners
Average wind speed per weekday

Week of the year

Wind speed (ms⁻¹)
Historical wind distribution

Historic occurrence

Wind speed (ms⁻¹)

0% 2% 4% 6% 8% 10% 12% 14% 16% 18% 20%
Wind power curve for a turbine

Power (kW)

Cut-out wind speed

Wind speed (ms-1)
Estimation of expected annual energy yield

Energy yield = \[ \text{Dependent on wind turbine} \times \text{Geographically specific} \times \text{Site specific} \times \text{Intrawindpark effects} \times \text{Reliability of measurements} \]
Debt financier’s models might size the debt based on a P90 production estimate for instance at a 1.20 Debt Service Cover Ratio
Cash Flow Waterfall and DSCR calculation

Debt Service Cover Ratio is an important ratio used by banks for determining debt capacity of a project.

DSCR = \frac{Cash Flow Available For Debt Service}{Debt Service}
Illustrative cash flow overview of a wind project

- Operating Costs
- Taxes
- Debt Service
- Equity Cash Flows
Project financials: base case

Following Assumptions:
- Annuity Profile
- P90 at 1.30x minimum DSCR

<table>
<thead>
<tr>
<th></th>
<th>P50</th>
<th>P75</th>
<th>P90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Leverage</td>
<td>79.23%</td>
<td>75.36%</td>
<td>71.68%</td>
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<tr>
<td>Internal Rate of Return</td>
<td>18%</td>
<td>14%</td>
<td>11%</td>
</tr>
</tbody>
</table>
• Following Assumptions:
  - Sculpted Repayment Profile
  - P90 at 1.30x minimum DSCR

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<tr>
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<th>P50</th>
<th>P75</th>
<th>P90</th>
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</thead>
<tbody>
<tr>
<td>Maximum Leverage</td>
<td>92.72%</td>
<td></td>
<td>78.23%</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>22%</td>
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<td>13%</td>
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