Everest Energy Group

Bioenergy project finance, experiences and lessons learned

How2Guide for Bioenergy
Bangkok, Thailand, 23-24 July 2014

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- Everest Energy
- NL Enterprise Agency, Netherlands Program Sustainable Biomass - NPSB
- UMA - Commercial Support Program
- UMA - Lessons Learned in Project Development
- FUMA - Matchmaking With Financiers
- FUMA – Lessons Learned
- Conclusions
- The Way Forward
Independent global energy project developer and project advisor:

– Headquartered in the Netherlands with offices in Indonesia and USA;
– Specialized in structured and “hands-on” project development where bio-energy (biomass, biogas, biowaste and biofuel) is created and converted into electricity;
– Combines industry, project financing and technical expertise, thus increasing the chances of success and speedy execution.

– By executing both advisory and development assignments we service our clients with “real life” expertise, analytical background and in-depth content;
– Servicing public institutions, private clients and NGOs.
Everest Energy approach

Projects are structured according to the EE “7 Building Blocks” principle:

- Each block is developed simultaneously and with equal weight;
- Allows to identify project key risks and potentials;
- Information is presented in an “investor-friendly” manner;
- Chances of obtaining project finance are dramatically increased.
The Dutch Ministry of Economic Affairs and Ministry of Foreign Affairs have developed 2 programs in line with UN Development Goals:

- Goal 1: eradicate extreme poverty and hunger
- Goal 7: ensure environmental sustainability

RVO is the governmental executive body responsible for the implementation of the 2 programs:

- 1-DBI Program: Export from developing countries
- 2-DBM Program: Production for local markets

Goal: stimulate, support and facilitate sustainable biomass production projects
NPSB Program

• 41 Bio-Energy Projects
  – Focus on Asia (12), Africa (11) and Latin America (11)

• Variety of biomass inputs:
  – Bio-residues, woody biomass and energy crops cultivated for conversion to energy.

• Outputs:
  – Solid Biomass, Liquid Biofuel or Biogas.
UMA Commercial Support Program

- In 2012-2013 Everest Energy was asked by RVO to execute a commercial support program for 24 NPSB projects.
- The program enhanced the insights of the economic feasibility and scalability of these projects by improving their structure & bankability.
UMA Commercial Support Program

- Heterogeneous input, output and technologies
UMA Commercial Support Program

- Heterogeneous input, output and technologies
UMA Commercial Support Program

- Heterogeneous input, output and technologies
Increasing bankability and structure of projects through:

- Strategic analysis $\rightarrow$ qualitative analysis
- Business case evaluation $\rightarrow$ quantitative analysis
- Investment criteria $\rightarrow$ best strategy to attract investment
- Structured investment documentation $\rightarrow$ project data to management data
UMA Commercial Support Program

- Qualitative Strategic Analysis of Project:
  - Questionnaire, interview and 1-to-1 session;
  - Project description, PFD, SWOT analysis;
  - Project Success Factors analysis: 1-5 scale Spider Diagram with 8 key indicators

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### SWOT analysis

**Strengths**
1. The feedstock is readily available at different locations.
2. The value of CO₂ emission rights has not been incorporated yet.
3. The government is obliged to buy produced electricity at high fixed prices.

**Weaknesses**
1. Engineering and construction are proving lengthy, diverse and costly.
2. Operational development and execution resources are required for up-scaling.
3. There is a dependency on one party as supplier and buyer.

**Opportunities**
1. Growth of the asset portfolio.

**Threats**
1. Due to competition, speed of development is important.
2. There is a dependency on one party as supplier and initiator.

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**Spider diagram**

Project X has a well-developed project with large scalability potential, converting a waste product from rice production into a useful output; electricity.

The involvement of the large agricultural company supplying the residues leads to high input availability, a strong local partner and high scaling potential.
UMA Commercial Support Program

- PSF analysis allows for structuring and conclusions on both a project level as well as a portfolio level, in an easily understood format;
UMA Commercial Support Program

- Quantitative project analysis: P&L, Balance Sheet & Discounted Cash Flow Model

### Project IRR calculation

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</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>USD</td>
<td>-767,696.26</td>
<td>2,444,045.06</td>
<td>3,529,248.05</td>
<td>3,882,172.86</td>
<td>4,270,390.15</td>
<td>4,697,429.16</td>
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<tr>
<td>Depreciation</td>
<td>USD</td>
<td>-</td>
<td>364,642.00</td>
<td>364,642.00</td>
<td>364,642.00</td>
<td>364,642.00</td>
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<tr>
<td>EBIT</td>
<td>USD</td>
<td>-767,696.26</td>
<td>2,079,403.06</td>
<td>3,164,606.05</td>
<td>3,517,530.86</td>
<td>3,905,748.15</td>
<td>4,337,787.16</td>
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<tr>
<td>Net Taxes</td>
<td>USD</td>
<td>-</td>
<td>655,328.98</td>
<td>1,003,601.94</td>
<td>1,117,545.88</td>
<td>1,242,783.41</td>
<td>1,382,043.89</td>
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<tr>
<td>Capex</td>
<td>USD</td>
<td>3,000,000.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Changes in Working Capital</td>
<td>USD</td>
<td>-</td>
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**FREE CASH FLOW**

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</thead>
<tbody>
<tr>
<td>Free Cash Flow</td>
<td>USD</td>
<td>-3,767,696.26</td>
<td>1,788,716.08</td>
<td>2,525,646.12</td>
<td>2,764,626.98</td>
<td>3,027,606.74</td>
<td>3,315,385.27</td>
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<tr>
<td>Cumulative Free Cash Flow</td>
<td>USD</td>
<td>-3,767,696.26</td>
<td>-1,978,980.18</td>
<td>546,665.94</td>
<td>3,311,292.92</td>
<td>6,338,899.66</td>
<td>9,654,284.93</td>
</tr>
</tbody>
</table>

**Project IRR - overall 7 years**

- 60.11%
- 52.52%
- 8.98%
- 36.22%
- 49.36%
- 56.25%
- 60.11%

**Debt Service Coverage Ratio - avg. 7 years**

- 33.51
- 77.59
- 19.44
- 21.77
- 24.37
- 27.30
- 30.59

**Discounted Free Cash Flow**

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</thead>
<tbody>
<tr>
<td>Free Cash Flow to Equity</td>
<td>USD</td>
<td>-2,299,196.26</td>
<td>1,607,216.08</td>
<td>2,347,296.12</td>
<td>2,589,426.98</td>
<td>2,855,556.74</td>
<td>3,146,485.27</td>
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<tr>
<td>Cumulative Free Cash Flow to Equity</td>
<td>USD</td>
<td>-2,299,196.26</td>
<td>-691,980.18</td>
<td>1,655,315.94</td>
<td>4,244,742.92</td>
<td>7,100,299.66</td>
<td>10,246,784.93</td>
</tr>
</tbody>
</table>

**Equity IRR calculation**

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<tbody>
<tr>
<td>Capex</td>
<td>USD</td>
<td>3,000,000.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Debt</td>
<td>USD</td>
<td>1,500,000.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>4,270,390.15</td>
<td>4,697,429.16</td>
</tr>
<tr>
<td>Debt repayment</td>
<td>USD</td>
<td>-</td>
<td>150,000.00</td>
<td>150,000.00</td>
<td>150,000.00</td>
<td>150,000.00</td>
<td>150,000.00</td>
</tr>
<tr>
<td>Interest on debt</td>
<td>USD</td>
<td>31,500.00</td>
<td>31,500.00</td>
<td>28,350.00</td>
<td>25,200.00</td>
<td>22,050.00</td>
<td>18,900.00</td>
</tr>
<tr>
<td>Net Taxes</td>
<td>USD</td>
<td>-</td>
<td>655,328.98</td>
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<td>USD</td>
<td>-</td>
<td>-</td>
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**FREE CASH FLOW TO EQUITY**

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<td>7,100,299.66</td>
<td>10,246,784.93</td>
</tr>
</tbody>
</table>

**Equity IRR - overall 7 years**

- 89.80%
- 30.10%
- 41.87%
- 69.41%
- 81.31%
- 86.95%
- 89.80%

(data is for illustrative purpose only)
**UMA Commercial Support Program**

- **Sensitivity Analysis:**

<table>
<thead>
<tr>
<th>Project data</th>
<th>Baseline</th>
<th>Sensitivity</th>
<th>New project data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1 - price</td>
<td>45.00</td>
<td>100%</td>
<td>45.00</td>
</tr>
<tr>
<td>Output 1 - price</td>
<td>250.00</td>
<td>100%</td>
<td>250.00</td>
</tr>
<tr>
<td>Capex</td>
<td>4,755,200.00</td>
<td>100%</td>
<td>4,755,200.00</td>
</tr>
<tr>
<td>Equity share</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>Debt interest rate</td>
<td>7%</td>
<td>100%</td>
<td>7%</td>
</tr>
<tr>
<td>Equity return rate</td>
<td>18%</td>
<td>100%</td>
<td>18%</td>
</tr>
<tr>
<td>WACC</td>
<td>11.38%</td>
<td>-</td>
<td>11.38%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Key financial indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenarios</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Baseline</td>
</tr>
<tr>
<td>New Scenario</td>
</tr>
<tr>
<td>% Change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project success indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Input: Length of Market</td>
</tr>
<tr>
<td>Scalability of the project</td>
</tr>
<tr>
<td>Sales: Length of market</td>
</tr>
<tr>
<td>Team: day to day execution</td>
</tr>
<tr>
<td>Sales of Output: Contracted</td>
</tr>
<tr>
<td>Team: project development</td>
</tr>
<tr>
<td>Availability proven technology</td>
</tr>
<tr>
<td>Availability O&amp;M</td>
</tr>
<tr>
<td>Availability PC (as part of EPC)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Key financial indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NPV</strong></td>
</tr>
<tr>
<td><strong>Avg. EBITDA</strong></td>
</tr>
<tr>
<td><strong>Cumulative FCF</strong></td>
</tr>
<tr>
<td><strong>Cumulative profit</strong></td>
</tr>
<tr>
<td><strong>Project IRR</strong></td>
</tr>
<tr>
<td><strong>Equity IRR</strong></td>
</tr>
</tbody>
</table>

(data is for illustrative purpose only)
Uma Commercial Support Program

- Sensitivity Analysis → real time updates

<table>
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<tr>
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<th>Baseline</th>
<th>Sensitivity</th>
<th>New project data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1 - price</td>
<td>45.00</td>
<td>125%</td>
<td>56.25</td>
</tr>
<tr>
<td>Output 1 - price</td>
<td>250.00</td>
<td>115%</td>
<td>287.50</td>
</tr>
<tr>
<td>Capex</td>
<td>4,755,200.00</td>
<td>75%</td>
<td>3,566,400.00</td>
</tr>
<tr>
<td>Equity share</td>
<td>50%</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Debt interest rate</td>
<td>7%</td>
<td>100%</td>
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<td>WACC</td>
<td>11.38%</td>
<td>7%</td>
<td>8.07%</td>
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<table>
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<tr>
<td>New Scenario</td>
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</tbody>
</table>

% Change: 91.1% 46.7% 13.8% 23.8% 9.6% 66.6%

<table>
<thead>
<tr>
<th>Changes in Key financial indicators</th>
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</thead>
<tbody>
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<td>NPV</td>
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<tr>
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<td>Equity IRR</td>
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UMA Commercial Support Program

• Based on qualitative & quantitative data, strategic analysis of the project is executed
• 48 indicators to be able to better assess projects likelihood of success and sustained financial, social and environmental gain
• Result in Management data to analyze current and future proposals

<table>
<thead>
<tr>
<th>Category</th>
<th>Explanation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Development Building Blocks</td>
<td>Key-variables which need to be in place for successful project development</td>
<td>Risk free presence of feedstock, guaranteed output market, logistics, licensing, etc.</td>
</tr>
<tr>
<td>Financial Parameters</td>
<td>Standard economic measures used and understood by the global financial world</td>
<td>CapEx, OpEx, DSCR, IRR etc.</td>
</tr>
<tr>
<td>Macro Data</td>
<td>Geo-Political and Technological data</td>
<td>Sustainability, policy support etc.</td>
</tr>
</tbody>
</table>
Lessons Learned: Input

• Markets are looking for sourcing the most competitive option in feedstock resources.

• Feedstock with multiple end-use markets are likely be sold to the market offering the most attractive prices.

• Sensitivity analysis is essential given the changes in availability and market price fluctuations.

• Securing input is of key importance:
  – Engaging with local stakeholders greatly increases stability of the input.
  – Engaging with local and national policy makers for land-use planning and management, permits and licenses.
Lessons Learned: Output

- A stable output market is of vital importance for a project to generate cash flow and to attract project finance.

- It is essential to have vision in the market opportunities on both the short and long term.

- Long-term uptake of the biomass, and a reasonable price, are needed to justify the investment.

- The regulatory framework and an enabling environment are key for the bioenergy market.
Lessons Learned: local Stakeholders

- Strong local experience and network improves access to local partners, communities, and government support:
  - Combination of local and international partners
  - Combination of capabilities in the team
  - Experience with institutional environment, S&D and technical expertise

- Involving local stakeholders increases the chances of successfully gaining access to financial resources.

- Cross-cutting nature of bioenergy means coordination and understanding among policy makers, industry and finance is required.
# Lessons Learned: Do’s & Don’ts

<table>
<thead>
<tr>
<th>Do’s</th>
<th>Attention points</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Structured Project Development is paramount for all projects.</td>
<td>• Don’t deviate from standards, use common denominators (M3, MT, etc).</td>
</tr>
<tr>
<td>• Be clear and precise with your information, opinions and project</td>
<td>• Develop scalable projects.</td>
</tr>
<tr>
<td>strengths &amp; weaknesses.</td>
<td></td>
</tr>
<tr>
<td>• Calculate a conservative case and present sensitivities.</td>
<td>• Key investment criteria of financiers mirror EE Project Success Factors.</td>
</tr>
<tr>
<td>• Keep the core project team small and lines short.</td>
<td>• Financiers prefer projects with larger size: bundle small projects.</td>
</tr>
</tbody>
</table>
FUMA Funding Facility

• On behalf of RVO, Everest Energy is now tasked with the development of:
  – Open ended funding facility, starting with the DBM/DBI project-base
  – Investigating barriers-to-launch and recommend solutions to launch

• Goals of the fund:
  – Provide funding for growth of renewable energy projects which help
    improve both sustainable as well as economic development.

• Fund Development phases:
  – **Phase 1:** clustering of project in Portfolios based on KFI, project funding
    requirements and preconditions of an investment portfolio.
  – **Phase 2:** match Portfolios with Investors: analyse criteria for investor
    selection; catalogue operational requirements of every project portfolio
    and investigate the potential match
FUMA - Lessons Learned

Via the FUMA investigation, EE has examined the best ways to finance a portfolio of bioenergy projects:

• Structure the project before approaching funders.

• The most eligible sort of investors prove to be Development Banks and Funds, Private Equity and Credit Enhancement Agencies.

• Commercial (High Street Banks) have difficulty servicing the demand of bio-energy projects.

• Investors recommend to use an existing infrastructure for a new facility and to work together with partners who have similar interests and goals.
  – Bundle small projects;
  – Make optimal use of synergies between projects;
  – Structuring project finance to a portfolio of projects with similar risk/return profiles and cash flow patterns increases financing potential.
Conclusions

• Experience indicates that project development requires a specific skillset and the presence of this skillset greatly improves chances of success.

• Analyzing projects on the basis of key performance indicators gives a quick and thorough view of project’s barriers and opportunities in a comprehensive and ready to use manner for project partners, policy makers and investors alike.

• Financiers key investment criteria mirror EE Project Success Factors:
  – Risk-free presence of feedstock; presence of buyer for log-term cash flow; strong management team; etc.

• Financiers prefer projects with larger size, for small projects bundling should be considered.

• Involving national and local stakeholders will lead to increased stability of the input and output markets of the bioenergy system.
The Way Forward

• Project Structuring is of key importance to:
  – Attract project finance;
  – Manage project risks;
  – Provide long-term project stability.

• Combine qualitative & quantitative tools: PSFs + DCF + Sensitivity.

• The best way of structuring small to mid-size projects is a balanced approach where all the project building blocks are well developed.

• The most eligible sort of investors for bioenergy projects prove to be Development Banks and Funds, Private Equity and Credit Enhancement agencies.

• Also public entities and NGOs will need to work with project development tools to best evaluate and present their projects.
  – PANGEA and Everest Energy in Africa
Contact details

We invite you for an open discussion and look forward to your reply.

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Zeist, The Netherlands