ACCELIOS Profile

ACCELIOS Solar offers technical and commercial advisory services with an integrated perspective on PV quality and risk management

Advisory Services

<table>
<thead>
<tr>
<th>Services</th>
<th>PV Industry</th>
<th>Investors</th>
<th>Banks</th>
<th>Insurances</th>
<th>Governments</th>
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</thead>
<tbody>
<tr>
<td>Strategic advice</td>
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<tr>
<td>Due diligence</td>
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<tr>
<td>Audits</td>
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<td>Expert opinions</td>
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<tr>
<td>Claims management</td>
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<tr>
<td>Business modelling</td>
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<td>✓</td>
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</tr>
</tbody>
</table>

References

- > 750 MW Commercial and technical due diligence of PV module manufacturers
- ~ 50 Production audits at PV module and inverter manufacturers
- > 10 Bankability books for module and inverter manufacturers
- > 1,500 MW Technical and commercial screening of PV project pipeline for banks and investors
- > 20 Commercial and technical due diligence of PV projects
- > 2,000 Insurance claims of PV systems
Solar Bankability

A bankability assessment requires a thorough due diligence of all potential project risks...

<table>
<thead>
<tr>
<th>Finance</th>
<th>Project company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>Foundation</td>
</tr>
<tr>
<td>Cash flow</td>
<td>Liabilities</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Losses</td>
</tr>
<tr>
<td>Financing</td>
<td>Tax obligations</td>
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<table>
<thead>
<tr>
<th>Tax</th>
<th>Technology</th>
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</thead>
<tbody>
<tr>
<td>Local taxes</td>
<td>System design</td>
</tr>
<tr>
<td>International taxes</td>
<td>Installation/commissioning</td>
</tr>
<tr>
<td>Acquisition/divestment taxes</td>
<td>Maintenance/repair</td>
</tr>
<tr>
<td>Depreciation</td>
<td>Guarantees/warranties</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site acquisition/ lease</td>
<td>Project specific concept</td>
</tr>
<tr>
<td>Authorizations</td>
<td>All risks</td>
</tr>
<tr>
<td>Grid connection/PPA</td>
<td>Revenues guarantee</td>
</tr>
<tr>
<td>General contractor</td>
<td>Project specific needs</td>
</tr>
</tbody>
</table>
Solar Bankability

…followed by an appropriate risk management strategy

A. Risk identification (along value chain/life cycle)
   - Identification
   - Impact assessment
   - Prioritization

B. Risk allocation (liable party)
   - EPC
   - Component supplier
   - Operator
   - Owner
   - Lender

C. Technical risk mitigation
   - Preventive design/commissioning
   - Preventive O&M

D. Financial risk mitigation
   - Insurance provisions
   - Investor provisions
   - Lender provisions
The ultimate risk throughout the entire project life cycle will be borne by the project investor.

### Stakeholders
- **Investor**
- **Bank**
- **Insurance**
- **Landowner**
- **Utility**
- **Government**

### Project Phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>Approval</th>
<th>Grid Connect</th>
<th>Dismantling</th>
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</thead>
<tbody>
<tr>
<td>Development</td>
<td>~1-1.5 years</td>
<td>~1-6 months</td>
<td>~20-30 years</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
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<tr>
<td>Operation</td>
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</table>

### Risk Areas
- **Bankability**
- **Insurability**

### Contractors
- **EPC Contractor**
- **System Installer**
- **Module Inverter, BOS**
- **O&M Contractor**
Owner’s engineers with specific PV industry expertise can assist investors in the assessment of technical risks.

**Technical Risks**

- **Module: Hot spot**
- **Module: Delamination**
- **Mounting system: Statics**
- **Cable: Animal bite**
Quality Standards

The PV industry is highly dynamic and innovative. Not all risks are fully visible yet. Standards have to be constantly developed and updated.
Solar Bankability Project

Quantifying and managing the technical risks for current and new business models to improve financeability and attractiveness of PV investments

Project workflow

Consortium partners / work packages

- Eurac Research (Italy) WP 1+6
- TÜV Rheinland (Germany) WP 2
- 3E (Belgium) WP 3+6
- ACCELIOS Solar (Germany) WP 4
- SolarPowerEurope (Belgium) WP 5

The Solar Bankability project has received funding from the European Union’s Horizon 2020 research and innovation programme under the grant agreement No 649997
The project addresses financial market actors, owners & operators, industry, policy makers. The project covers 7 countries and lasts 24 months.

**Solar Bankability Project**

Project duration: March 2015 – February 2017

Regional coverage

**Expected impact**

- Reduce uncertainty, increase investors’ confidence and trust towards PV investments.
- Valuation methodologies of PV investments based on standardized risk rating system.
- Standardized descriptions and proposal of models for cost calculation including practices for accounting of technical risks in PV energy investments.
- National strategies for financing solar photovoltaic energy investments.

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Advisors in Solar Energy
Markets – Technologies – Financial Solutions

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