Catalyzing Finance for Solar Energy in India

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The Future of Solar Energy in India

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KfW Bankengruppe at a glance

**Domestic business**

We promote Germany

- Business Area Mittelstandsbank
  - Promotion SMEs, business founders, start-ups
- Business Area Privatkundenbank
  - Promotion construction of new housing and modernisation as well as education
- Business Area Kommunalbank
  - Financing municipal infrastructure projects and global loans

**International business**

We ensure internationalisation

- Business Area Export and Project Finance
  - International project and export finance

We promote development

- Business Area Promotion of Developing and Transition Countries
  - Promotion of developing and transition countries

Promotion of Climate and Environmental Protection

KfW IPEX-Bank

KfW DEG
KfW’s Energy portfolio in India compared to other countries

- Albania: 178 mn. EUR
- Brazil: 182 mn. EUR
- Nepal: 197 mn. EUR
- Morocco: 207 mn. EUR
- China: 221 mn. EUR
- Serbia: 290 mn. EUR
- Interreg: 514 mn. EUR
- Egypt: 533 mn. EUR
- India: 1,450 mn. EUR

All values in mn. EUR.
Overview of FC Commitments in India (2007-2012)
Ongoing Energy Portfolio in India

Portfolio Mix

- Renewables: 69%
- Energy Efficiency: 31%

Mode of Financing

- Direct Funding: 52%
- Credit Lines: 48%
Solar Projects in India financed by KfW

› Our financing in the solar sector is mostly structured as re-financing of loans of IREDA, REC and IIFCL.

› KfW has invested 290 million Euros (2,000 crore Rupees) in 13 projects.

› KfW’s largest investment in the solar sector is the 150 MW Sakri project implemented by MAHAGENCO in the state of Maharashtra.

› Up to now KfW has only financed PV projects but is also looking at options for CSP projects in India and “land neutral” solar energy projects.
Sakri: The largest PV plant in India is financed by KfW

- Borrower: Government of India - Executing Agency: MAHAGENCO
- Loan EUR 250 Million (Reduced Interest Loan) - Grant for Technical Assistance EUR 0.7 Million
- Date of loan signing: 10 August 2011
- Currently 125 MW are already producing power
- Estimated electricity generation: 216 GWh p.a. - Estimated CO₂ Reduction 186,000 tons p.a.
German Solar growth story: Facts

- RE act of 2000
  - Priority to RE sources
  - Streamlined permitting
  - Investment protection - 20 years FiT
- Readily available finance
- Opened up the grid for solar and wind
- Most reliable grid in Europe
Power generation by sources in Germany in 2013

**Installed solar and wind power**

<table>
<thead>
<tr>
<th>Source</th>
<th>GW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Power</td>
<td>34.558 GW</td>
</tr>
<tr>
<td>Wind Power</td>
<td>30.533 GW</td>
</tr>
</tbody>
</table>

*Graph: B. Burger, Fraunhofer ISE; data: Bundesnetzagentur*

**Electricity production: first eight months 2013**

<table>
<thead>
<tr>
<th>Source</th>
<th>TWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium</td>
<td>59.2 TWh</td>
</tr>
<tr>
<td>Brown Coal</td>
<td>96.3 TWh</td>
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<tr>
<td>Hard Coal</td>
<td>73.2 TWh</td>
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<tr>
<td>Gas</td>
<td>26.1 TWh</td>
</tr>
<tr>
<td>Wind</td>
<td>26.5 TWh</td>
</tr>
<tr>
<td>Solar</td>
<td>23.6 TWh</td>
</tr>
<tr>
<td>Run of River</td>
<td>11.7 TWh</td>
</tr>
</tbody>
</table>

*Graph: B. Burger, Fraunhofer ISE; data: European Stock Exchange EEX, energetic corrected values*
Consumer tariff versus Solar FiT
Increasing the financing for solar projects – Policy & Regulation

- Solar Park Infrastructure
- Infra Debt Finance/Take out
- Ensure evacuation and sufficient capacity
- Data collection and proliferation
- Mitigate offtaker risks/payment security
- Single Window Clearance
- Priority sector lending for renewables
- Enforce RPO regulation
- Reform REC mechanism
- DCR limiting trade finance
Increasing the financing for solar projects - Developers

- Ensure stringent quality criteria for EPC contractors
- Leverage Big Data
- Realistic bids in reverse bidding processes
- International standards for warranties, guarantees and insurances
- Have solid solar resource assessments
- Base PLF calculations on realistic assumptions
- Do not compromise quality for cost
- Ensure a sustainable O&M concept
- ECAs/Supplier credit
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