Panel 3: Lessons from infrastructure finance in the renewable energy sector

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Investment assessment flow

- All bottom-up Investment proposals
  - Categorise
    - Required Investments needs (existing portfolios)
    - Mandatory investments
    - Maintenance investments
    - Growth/New Investments
      - Strategic evaluation/filter
      - Risk filters
      - Financial Filter
        - Out selected
        - Put on hold
        - Put on hold

Asset development and investment plan
Perspective on investment criteria and decisions

New investment analysis

<table>
<thead>
<tr>
<th>Technology attractiveness</th>
<th>Country /market attractiveness</th>
<th>Business case attractiveness</th>
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Assessment of new investments

Portfolio benefits
- Synergies
- Production
- Vertical integration
- Skills
- Financial risk diversification

Market attractiveness
- Size, Growth
- Regulatory climate and risks
- Market profitability

Scenarios and uncertainty modeling capability

Scenario Description

- Moderate economic recovery from economic crisis
- EU countries push for fulfilling 20-20-20 targets
- Commodity prices in the long term at reinvestment cost levels

- 20-20-20 targets softened as implementation barriers materialize and opposition to subsidies increases

- Strong backlash of economic crisis
- Focus on energy efficiency as protectionist measure to decrease dependency on fossil fuel and stimulate local business (e.g., construction)

- Stronger economic recovery and deferred upstream investments lead to new peak in commodity prices
- Development of electric vehicles and CCS and nuclear renewal stimulated
Future investments turn toward clean production


After finalizing investments in Moorburg (Q3 2012/Q2 2013), Magnum (Q2 2013), Boxberg (Q1 2011) the portion of CAPEX for clean energy rises substantially.

capex excluding large M&A projects
Impact on CO2 emissions by investments

spec. CO2 emission (in g/kWh<sub>el</sub>)

existing assets and decided investments

portfolio incl. investment list

out of 10-years investment horizon

0 50 100 150 200 250 300 350 400 450 500 550

10 12 14 16 18 20 22 24 26 28 30

402

371
## Support systems play an important roll

<table>
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<tr>
<th>Support system</th>
<th>Risk assessment</th>
<th>Price level</th>
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<tbody>
<tr>
<td><strong>UK</strong>&lt;br&gt;• Certificate system with market pricing of certificates in addition to electricity price.&lt;br&gt;• Offshore generation receives 150% of base support</td>
<td>Low price risk&lt;br&gt;• Price slide brakes incorporated&lt;br&gt;• Quotas automatically increase if system hits targets to avoid price collapse</td>
<td>Current: Very high&lt;br&gt;– Onshore: ~140 EUR /MWh&lt;br&gt;– Offshore ~180 EUR/MWh&lt;br&gt;Expected: Very high</td>
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<td><strong>Denmark</strong>&lt;br&gt;• Feed-in premium on top of electricity price for generation&lt;br&gt;• For offshore wind, fixed tariff set by auctioning, and is valid for ~13 years</td>
<td>Medium to very low price risk&lt;br&gt;• Onshore only electricity price risk&lt;br&gt;• Very low price risk offshore&lt;br&gt;– Price risk only the last ~7 years of operation (electricity)</td>
<td>Current: Medium&lt;br&gt;– Onshore: ~50 EUR /MWh (additional if repower)&lt;br&gt;– Offshore: Sufficient (individually set)&lt;br&gt;Expected: Sufficient offshore</td>
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<td><strong>Germany</strong>&lt;br&gt;• Fixed tariff, higher offshore&lt;br&gt;• Tariffs decrease with time, after 5 yrs onshore and 12 yrs offshore</td>
<td>No price risk</td>
<td>Current (proposed): High&lt;br&gt;– Onshore: ~80 EUR /MWh&lt;br&gt;– Offshore: &gt;130 EUR/MWh (in addition: TSO pays for grid connection)&lt;br&gt;Expected: High</td>
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<tr>
<td><strong>Sweden</strong>&lt;br&gt;• Certificate system with market pricing of certificates in addition to electricity price</td>
<td>Very high price risk&lt;br&gt;• Complex certificate market with low liquidity</td>
<td>Current: Low&lt;br&gt;– 45 EUR /MWh&lt;br&gt;Expected: Low</td>
</tr>
</tbody>
</table>

Sources: DTI (UK system), NFPA (UK ROC Price), Department for Business, Enterprise and Regulatory Reform (UK electricity price), Nordpool (Swedish certificate price and Nordic electricity price), Draft for German law EEG (German prices and system)