Adaptation of business models to the development of support mechanisms and the power price

Deutsch-französisches Büro für die Energiewende/
Office franco-allemand pour la transition énergétique e.V.

Berlin | 16 October 2018 | Daniel Peschel
Adaptation of business models to the development of support mechanisms and the power price
Power Market and Auction Development
Cost and Revenues of Wind Onshore / PV

**Germany**

<table>
<thead>
<tr>
<th>Month</th>
<th>2017</th>
<th>2018</th>
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<tr>
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**France**

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Market prices - Futures

- CO2 price increase is main driver for recent power market developments
- Future power market will be the key driver for business models
Spot Prices – 10/17 until 10/18

Germany

Installed capacities

France

<table>
<thead>
<tr>
<th>Month</th>
<th>Installed Capacities</th>
<th>Wind</th>
<th>PV</th>
<th>Other</th>
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Wind, PV, Other
Relative Revenues of Wind Onshore & PV

- Relative value of wind power in Germany for new turbine model around 90% of base and PV around 95%
- Corresponding wind onshore value for France significantly higher, PV lower

Source: enervis based on national electricity exchanges
The Future Power Market and new Business Models
The “PPA-Story”
Declining LCOE and tariffs in combination with rising market values pave the way for subsidy-free renewables and zero-bids in RES auctions in Europe (depending on country / CfD scheme)

Recent development

- Historical EEG tariffs
- First auction results
- Declining market premium with decreasing LCOE

Future development

- PPA makes revenue risks manageable
- Possible development of RES market values
- Future auction bid corridor

1. Support system pays (large) surplus on RES market revenue
2. Market revenue partly higher than tariff (GER: 0 monthly market premium)?
3. Market revenue replace regulated tariff (GER: zero bid)?
What drives European power markets?

Mid- to long-term, power prices are highly depend on the development of commodity prices, generation and storage technologies as well as policy and market design objectives.
Base price development in FR and DE
Based on an enervis „Best Guess“ scenario

2025

2030

2035

Source: enervis
The PPA-Story

What applies to PPAs:
- Wholesale market = Benchmark for producer (revenues) and Offtaker (procurement of power)
- Value of green attribute = surcharge on wholesale power price (GoO)
### European Power Market Outlook 2018 - 2045

#### Available focus countries
- DE, AT, CH, FR, BE, NL, PL, CZ, SK, HU, GB, ES, PT, IT, DK, NO, SE, FI, BG, MK, AL

#### Scenarios
- Best guess scenario or set of three consistent scenarios (high, medium, low)

#### Spot prices
- Base, Peak, Off-Peak

#### Spreads
- Clean-spark-, clean-dark-spread

#### Capture prices
- PV, onshore and offshore wind

#### Capacity and generation mix
- By fuel and technology

#### Export-balance
- Net-exports by border

#### Summary
- Management summary of major drivers and scenario results by country

#### Detailed set of assumptions
- Fuel and CO₂ prices, cost of generation technologies, NTCs, renewable trajectories, number of EVs, electricity demand, etc.
Online valuation tool

Market Value Atlas Wind/PV

- Online tool for valuation of wind onshore and PV market values, depending on
  - Location
  - Turbine type / Hub height (wind)
  - Inclination / Orientation (PV)
- Output
  - Historic and scenario-based project-specific absolute market values and/or differences to settlement prices (specific profile cost)
- To be used for valuation of:
  - Bidding strategies
  - Power market upsides
  - Green PPAs
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