Onshore Wind in Germany - The next step of Germans energy transition: The introduction of competitive tendering schemes for renewable energy support

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Overview

- Background (History & RE Targets)
- Pilot auction for ground mounted PV
- EEG revision 2016 and the introduction of tendering
- Conclusion for Onshore-projects
**Background: German gross electricity production**

*Renewables have overtaken each conventional source to become the largest electricity source in just ten years.*

### 2004
- **Total:** 617.5 TWh
- **Renewables share:** 56.6 TWh

### 2014
- **Total:** 610 TWh
- **Renewables share:** ~157.4 TWh

### 2015
- **Total:** 647 TWh
- **Renewable share:** 194 TWh

Source: EcoSys 2015, AGEB 2015
Overall **target corridor**

- In 2025: between 40% and 45% RES-E
- In 2035: between 55% and 60% RES-E
- Focus on Wind and PV as most cost-effective solutions

**Capacity additions**

- Onshore wind and PV
  2 500 MW (2.5 GW) per year each
- Bioenergy 100 MW per year
- Offshore wind 6.5 GW by 2020, 15 GW by 2030
Background: EEG Amendment 2014

More coordination
(1) Binding target corridors for RES deployment
(2) Introducing quantity control mechanisms

More efficiency
(3) Focus on cost-efficient technologies

More market integration
(4) Increase market integration through premium system
(5) Tendering scheme for ground-mounted PV

More diversified distribution of costs
(6) EEG levy on self-supply
(7) Adjusted exemptions for the industry

More Europe
(8) Open auctioning scheme for European neighbours

Affordability

Environmentally friendly energy supply

Security of supply
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General intention: determine support levels through tenders for renewable technologies by 2017 (market instrument)

First, necessary experience needed to be gained

The first pilot phase from 2015 will cover 400 MW ground-mounted PV per year (2015: 500 MW, 2014: 400 MW, 2013: 300 MW)

Several challenges need to be solved before rolling out tendering, e.g.

- non-realisation
- strategic bidding
- higher risks for investors
- underbidding

Auctions can help to achieve further support cost reductions.
Faster response to market developments
What does the tendering scheme look like?

- 3 auction rounds per year
- Volume of PV pilot is on average 400 MW:
- Only „price“ is decisive for awarding contracts
- Price rule: „pay-as-bid“, except for 2nd and 3rd tender: „uniform pricing“
## Results from the 3 auction rounds in 2015

<table>
<thead>
<tr>
<th>Date</th>
<th>Tendered volume</th>
<th>Bids (volume)</th>
<th>Successful bids (awarded volume)</th>
<th>Ø reference value</th>
<th>Corresponding FIT</th>
<th>Price mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. April 2015</td>
<td>150 MW</td>
<td>170 (715 MW)</td>
<td>25 (157 MW)</td>
<td>9,17 ct/kWh</td>
<td>9,02 ct/kWh</td>
<td>Pay-as-bid</td>
</tr>
<tr>
<td>1. August 2015</td>
<td>150 MW</td>
<td>136 (558 MW)</td>
<td>33 (159 MW)</td>
<td>8,48 ct/kWh</td>
<td>8,93 ct/kWh</td>
<td>Uniform pricing</td>
</tr>
<tr>
<td>1. Dezember 2015</td>
<td>200 MW</td>
<td>127 (562 MW)</td>
<td>43 (204 MW)</td>
<td>8,0 ct/kWh</td>
<td>No FIT under EEG for ground mounted PV</td>
<td>Uniform pricing</td>
</tr>
</tbody>
</table>
Lessons learned

- Intensive competition
- Volume several times oversubscribed
- Decreasing reference value from 1st to 3rd round (9,17 ct/kWh -> 8,49 ct/kWh -> 8,00 ct/kWh)
- Nearly all bids that were awarded a contract handed in the second bid bond
- Different actors participated, also smaller actors & projects have been successful
- Implementation of projects remains to be seen (two years time)
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Tenders for other RES

- Efficiency and success of tendering scheme is defined by level of competition in the respective market:
  - Experiences and design are difficult to transfer to other RES because of different market structures
- But: administration and bidders can learn and gather experiences with the PV pilot tendering scheme
Tenders for other RES

What have we done so far:

- Scientific consortium commissioned, close collaboration
- transparent process of
  - Pilot auctions and market analysis for all technologies (public consultation)
  - workshops with stakeholders on specific questions (e.g. platform power markets)
  - Publication of basic principles for other RE technologies in summer 2015 (public consultation)
  - Continuous work on EEG 2016, reflecting consultation
  - Publication of key points amending the EEG 2016
  - Report to the German parliament on pilot auctions (13.01.2016)
Time Schedule

- Time schedule for revision of EEG:
  - Revision process started
  - BMWi Draft version of EEG 2016 just finished
  - Interdepartmental coordination between the relevant ministries this weeks (e.g. Environment, Finance, agriculture)
  - Hearing of stakeholders, unions and Länder next weeks
  - Parliamentary procedure completed before the summer break
  - Notification of EEG 2016 with EC
  - 2017 first tenders for On- and Offshore
Guiding principles

- RE development in line with “deployment corridor”
- Cost efficiency (amount of funding should not exceed the amount that is needed in order for the installation to be operated in a way that is economically viable)
- Level playing field for all actors involved
Tenders for other RES

- Auctions for
  - Onshore wind energy
  - Offshore wind energy
  - Large scale photovoltaic installations (ground mounted, rooftops and PV systems installed on other physical structures (e.g. landfills) > 1 MW)
  - 80% of new RE production will tendered
  - No auctions for Water, Geothermal and biomass (auctions for biomass are eventually planned in a second step for existing installations).
Tenders for other RES

Technology specific but designs have common features

- 3-4 auctions round per year conducted by the Federal Network Agency
- Auction rounds open to single, sealed bids
- Security/ bid bonds necessary to ensure that only serious bids are submitted
- Bids for floating market premium
- Bids will be accepted, starting with the lowest, and until the amount of capacity that is being auctioned is reached. In principle, the amount of funding corresponds to the individual bid (pay as bid).
- Maximum price (published in advance)
onshore wind

- Auctions for onshore wind (Exemptions for installations < 1 MW capacity and prototypes with max. capacity of 100 MW/year)

- Auctions are open to installations that have been approved under the Federal Immissions Control Act (BImschG). → Late stage auction

- 3-4 rounds per year

- Bids based on the reference value of the market premium using a one-tier reference revenue model at a reference site (100%-site)

- Security/bid bond of 30,000 €/ MW

- Maximum price of 7.0 cents/kWh for 100-per-cent
Tenders for other RES

- One-tier reference value
  - Model to level the playing field across Germany and provide incentives for the construction of efficient installations on different sites with different wind conditions
  - Reference value assumes wind speed at 100 m above the ground is 6.45 m/s
  - Operators will submit bids based the assumption of a 100%-site
  - The actual reference value expected for the installation is multiplied by a adjustment factor and thus converted into a reference value of a 100%-site
  - This makes it possible to compare bids
Tenders for other RES

Illustration of adjustment factors
Tenders for other RES

Capacity volumes

- Deployment corridor crucial as it provides planning security which is important with regard to development in conventional power, the grid and Germany’s neighbours.

- For offshore wind, expansion targets set out in the EEG 2014 remain unchanged (6.5 MW 2020, 15 GW by 2030 max. of 11 GW by 2025 → 800 MW capacity per annum.

- PV > 1 MW → 500 MW and rooftops 2,000

- → capacity volume for onshore wind therefore key to ensuring that the rate of expansion does not deviate from the corridor.
Tenders for other RES

- Capacity volumes
  - Calculated using a formula that can be illustrated as follows:

\[
\text{Capacity volume for onshore wind energy} = \text{target figure for renewable electricity} - \text{amount of renewable electricity from existing installations} - \text{amount of renewable electricity from new installations (except onshore wind)}
\]
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Conclusion for existing Onshore-projects

- Tendering capacity volume
- Volume of permission in the future
- Profitability of the existing Onshore-project
  
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Thank you for your attention!