



Is Offshore Already Competitive? Analyzing German Offshore Wind Auctions

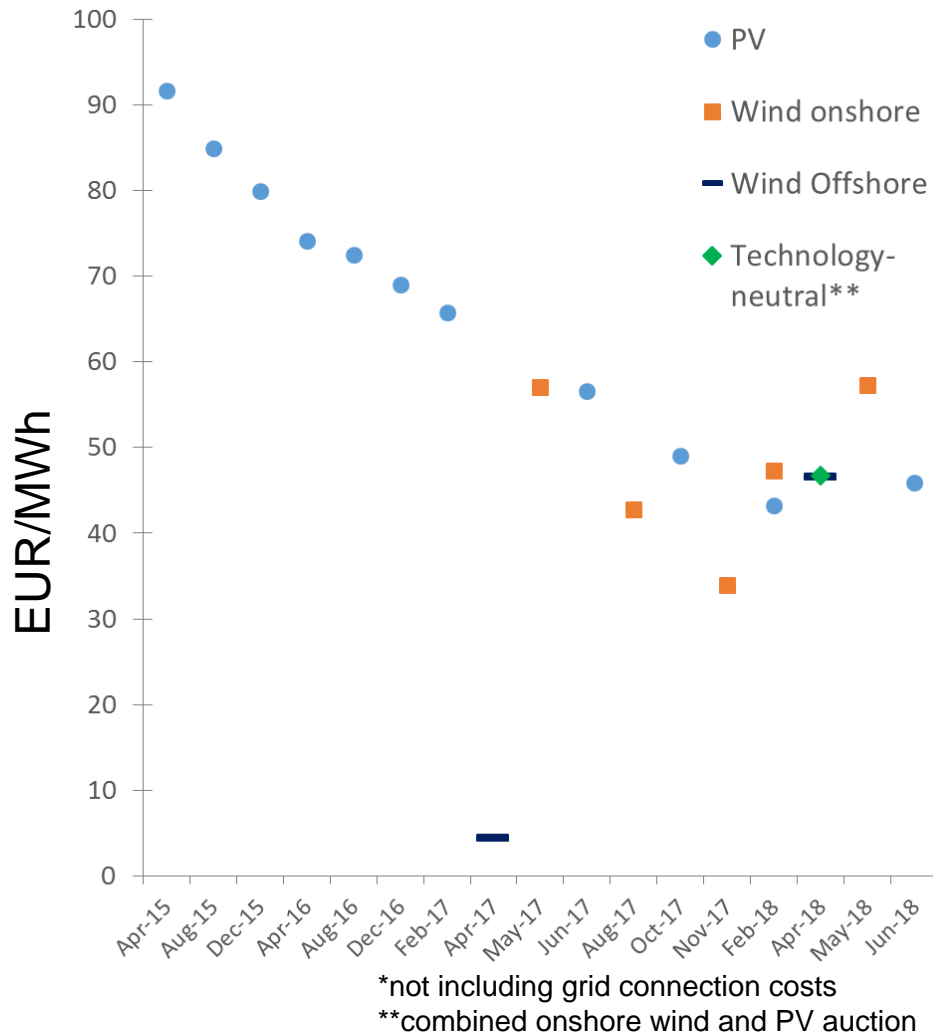
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Recent Trends in German RES Auctions: Auction Dates and Results (average payment for winning bids)



- ◆ Declining trend – but levelling out?
- ◆ Winning bids receive wholesale electricity price plus difference between bid and technology's average wholesale price
- ◆ All technologies on similar levels in recent auctions
- ◆ RES seem to be closing the gap to conventionals fast...
- ◆ ... – but details matter.

Auction Results and Research Question: Offshore Wind

- ◆ Auctions for German offshore wind projects going online between 2021 and 2025 (“transition period”)
 - 31 approved projects with a total planned capacity of 8,654 MW
 - 1. auction: 1,490 MW awarded on April 1st, 2017
 - 2. auction: 1,610 MW awarded on April 1st, 2018
- ◆ Results of 2017 auction:
 - The average accepted bid of 4.6 €/MWh stunned the industry
 - Three out of four winning projects bid zero (1,380 MW)
- ◆ Results of 2018 auction:
 - The average accepted bid of 46.6 €/MWh
 - The auction still had bids with 0 Euro/MWh (430 MW)
- ◆ *Research question: Why?*

Hypotheses

- a) *Bids are (expected to be) profitable*: Rising wholesale prices and lower LCOEs increase profitability of projects
- b) *“Option bidding”*: Investors have not yet decided on investment. If projects become profitable, they invest. If not, they do not invest and lose bid bond (which can thus be interpreted as an option premium).
- c) *Securing grid access*: Not all planned projects can be connected. Winning auction guarantees grid connection.
- d) *Other reasons*

Hypothesis a): Bids are (expected to be) profitable

- ◆ Relatively late FIDs: Ørsted in 2021, EnBW in 2023
 - Possible cost reductions
 - Next generation wind turbines, 13-15 MW capacity
 - Other cost reductions
 - Possible wholesale price increase
 - Net capacity reductions (nuclear phase-out, coal, ...)
 - Increasing costs for CO₂-emissions
- ◆ Not all fixed costs are included: costs of grid connection are paid by consumers
 - DoIWin5 (OWP West / BR West 1&2, Ørsted): 1,290 €/kW
 - BorWin5 (He Dreiht, EnBW): 1,550 €/kW

(Own cost estimates based on O-NEP 2025)
- ◆ “Winners’ curse” may be present

Hypothesis b): “Option bidding”

- ◆ Bidders hope that their projects will be profitable at time of FID
- ◆ Downside (project not profitable at FID): restricted to loss of bid bond (plus other sunk costs for investment before FID)
 - Bid bond: € 100 per kW in case of total non-compliance
(own estimate: 2.5 – 3.8 % of total investment costs)
- ◆ Upside (project profitable): unrestricted profit
 - Subsidy from winning the auction, for “zero” bids:
 - Grid connection subsidy
 - Right to be connected
 - Revenues on wholesale market

Hypothesis c): Securing grid access Constrained general setting (i)

- ◆ Total amount allocated for period 2021 to 2025: 3,100 MW
- ◆ Capacities of 31 approved projects (own calculations based on BSH): 8,654 MW
- ◆ Roughly 36 % of all approved projects could be realized before 2025
- ◆ However, competition was less severe in the Baltic Sea because at least 500 MW were reserved for it. (One of the reasons why bids in the Baltic Sea were higher)

Hypothesis c): Securing grid access

Constrained clusters (ii)

- ◆ Winning bids receive the right to get connected to the grid
- ◆ Offshore wind farms are grouped in clusters, i.e. zones with physical connection points
- ◆ A bid is accepted *if it neither exceeds the auction volume nor triggers a capacity shortage within a cluster (WindSeeG)*
- ◆ Not all projects within a cluster can be connected
- ◆ For example, cluster 7:
 - EnBW's He Dreiht project compete with Vattenfall's Global Tech 2 project for the 900 MW of capacity of NOR-7-1 connector
 - Furthermore, the competition is strengthened by projects located in cluster 6 which can also compete for the NOR-7-1 capacity
 - EnBW bids aggressively and gets the right for grid access. Global Tech 2 is cancelled

Hypothesis d): Other reasons

- ◆ Improve reputation for wind offshore projects in general
 - They used to be seen as the next cost driver in the German Energiewende
 - Now, they could be perceived as on the verge of competitiveness (at least in the same league as wind onshore and photovoltaic)
- ◆ Signaling (very) strong competitiveness to competitors
- ◆ EnBW is owned by the German state of Baden-Württemberg, which has a green party government that has set ambitious RE targets as share in EnBW production portfolio

Thank you for your attention!

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