For our environment

Umwelt Bundesamt

Westminster Energy, Environment & Transport

Forum Keynote Seminar

„Auctions for renewable energy in Germany: first results and lessons learnt' "

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From FiT to Auction Schemes

- **EEG 2012**
  - Voluntary market premium
  - For PV– indicative capacity cap (“atmender Deckel”, 2,5-3,5 GW/a)
- **EEG 2014**
  - Obligatory market premium + mandatory direct marketing
  - Pilot auctioning scheme for PV (400 MW/a)
  - Indicative capacity cap for further expansion of key technologies
- **EEG 2017**
  - Auctioning systems for roughly ¾ of additional renewables
  - Fixed capacity caps for key technologies
  - Technology neutral auctioning pilot for PV and Onshore Wind

→ **What’s next?**

Common Principles for the Auction Schemes

- Different market environments:
  - Technology specific auctions
  - Technology specific prequalification criteria; timeframes and penalties
- Restraining factor: restricted auctioned volumes
- Awarding procedure: only price is decisive (single-criteria-auction)
- Bids on floating market premium (ct/kWh)
- Pay-as-bid

Exemptions from auctions:

- installations ≤ 750 kW and new installations using biomass ≤ 150 kW
- pilot wind energy plants (125 MW/yr)
- hydro and geothermal power plants

Auction Scheme

All PV installations **> 750 kW**; **600 MW/a in total**

- Ground mounted PV installations (conversion areas, close to motorways)
- Rooftop installations
- PV installations installed on other physical structures (e.g. landfills)
- “Opening clause for Federal States”: In order to achieve more competition in auctions, Federal States can authorize either the use of arable or grass land for installing PV systems in certain regions (disadvantaged regions according to EU definition).

Volume: max. 10 MW, Maximum price: 8,91 ct/kWh dependent on the “breathing degression cap”; transfer to other site possible but with discount

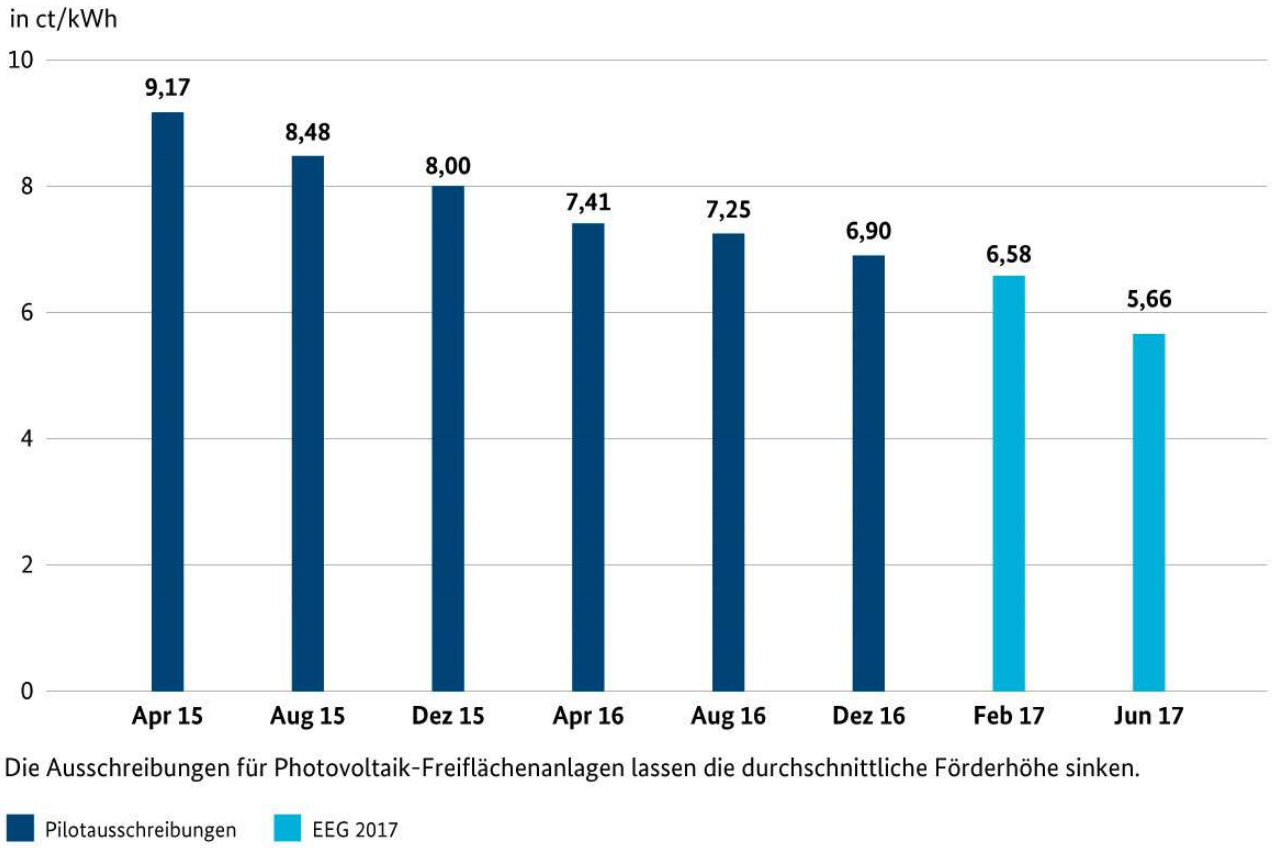
Realisation period: 24 months, Bid bond: 50 €/kW

Prequalification: admission by local authorities and/or area development plan

Results

(for ground mounted PV)

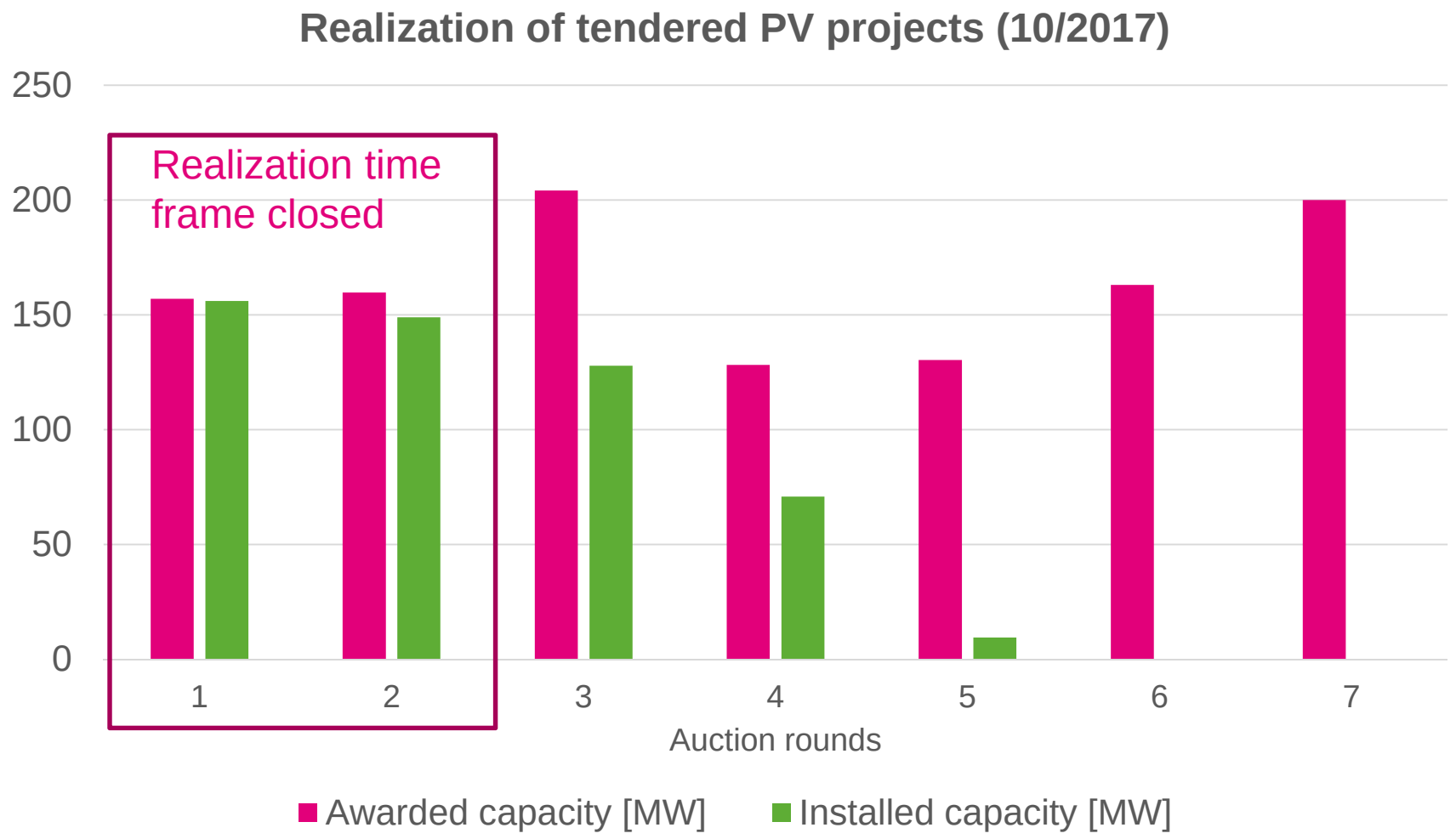
- Tendered volume: 150 – 200 MW per round
- Bidden volume: 3 – 6 times higher



Source : BMWi

Photovoltaics

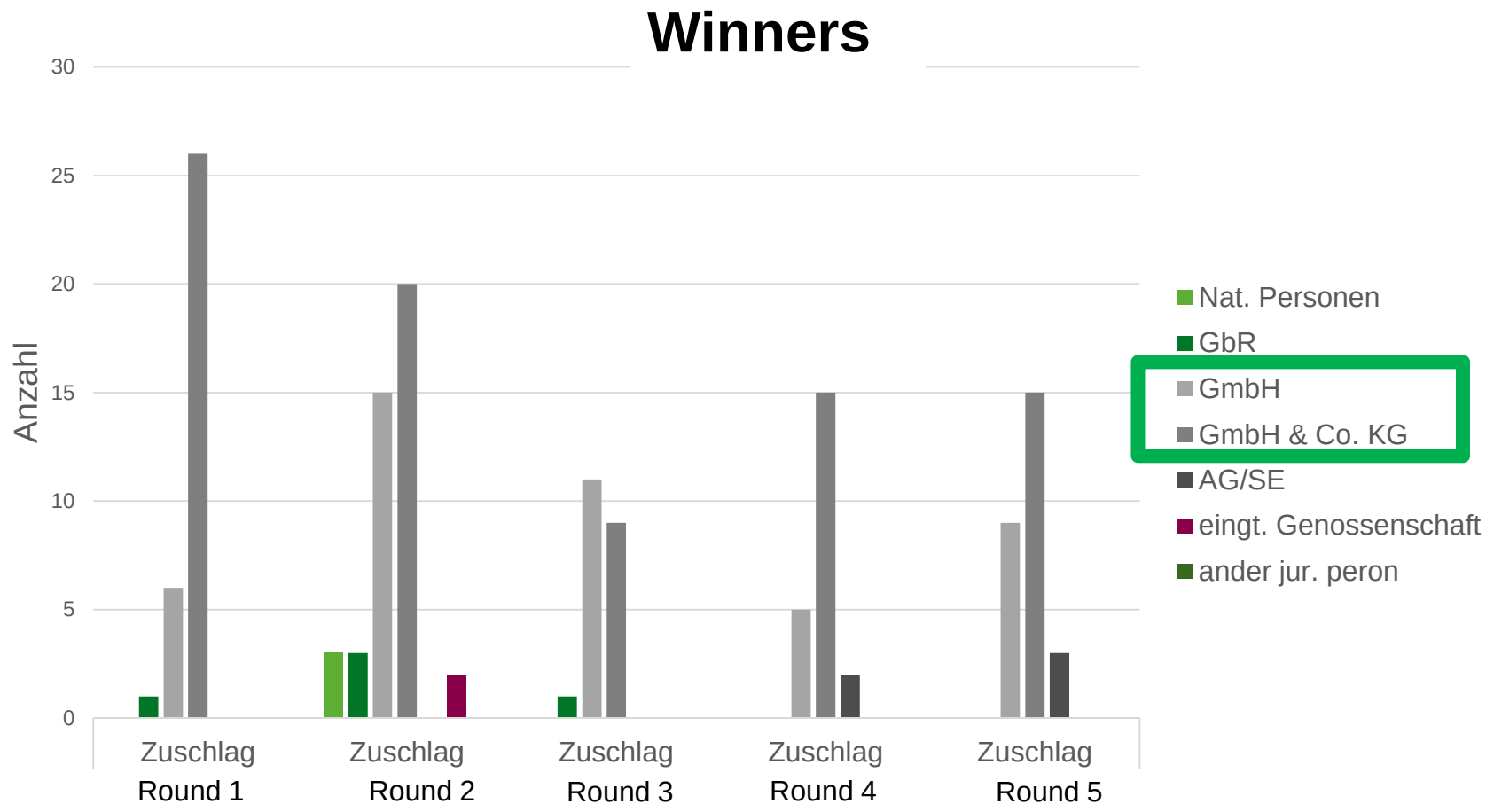
Realization rate: results so far



Source: UBA 2017 on basis of BNetzA

Photovoltaics

Participant Structure in the PV Pilots



Source: UBA 2017 on basis of BNetzA

Lessons learnt

- Higher cost degression than expected
- Higher realization rates than expected
- No chances for cooperatives and small enterprises
- Threshold for obligatory participation < 100 kW?

Wind onshore

Auction Scheme (1)

Framework conditions:

- 2018-2019: 2.800 MW per year, 4 auctions (700 MW each)
- From 2020: 2.900 MW per year, 3 auctions
- Pay as Bid
- Maximum bid price:

  auctions in 2017: 7 cent/kWh

  auctions from 2018: average of highest awarded bids of last three auctions +8 %

Pre-qualifications:

- Building permission (BImSchG)
- Bid bond: 30 €/kW (paid back after project is realised successful and in time)

Realisation period:

- Within 24 (without penalty) to 30 months (penalty), otherwise award expires

Awarded price correction:

- Depending on site quality (wind speed)
- Up to factor 1,29 for low and up to factor 0,79 for high wind speed sites
- Objective: comparable competitive conditions and equal installations nation-wide

Wind onshore

Auction Scheme (2)

Definition of energy communities (EC):

- at least 10 natural persons are members with voting rights
- no member has more than 10% of the voting rights
- at least 51% of the voting rights are with natural persons that live more than 1 year in the region of the project
- EC had no project within the last 12 months

Special frame conditions for energy communities:

- ~~Pay as Bid~~-uniform pricing (highest awarded bid)

Pre-qualifications:

- ~~Building permission (BImSchG)~~ no permission necessary
- Bid bond: ~~30 €/kW~~ 15 €/kW

large competitive advantage

Realisation period:

- Within ~~24~~-48 (without penalty) to ~~30~~-54 months (penalty),

Wind onshore

Results

	1. Round 02.05.17	2. Round 01.08.2017
Bid volume	2.137 MW	2.927 MW
Awarded amount		
total	807 MW	1.013
EC	775 MW (96 %)	958 MW (95%)
EC without permission	742 MW (92 %)	953 MW (94 %)
Awarded bids		
Highest price (=EC)	5,78 ct/kWh	4,29 ct/kWh
Average price	5, ct/kWh	28 ct/kWh
Lowest price	5,2 t/kWh	4,16 ct/kWh

actual EC?

EC: energy communities

- 25 % !

Wind onshore

Lessons learnt

- Special conditions for energy communities have been defined in order to ensure a broad variety of small participants
- Instead a large number of small enterprises have newly been founded by larger companies just to fulfill the requirements
- Most of the winning projects have been offered by these newly founded companies
- Since these projects must not be realized before the year 2021 it could happen that the targets will not be reached in the next 3-5 years

Wind offshore

Auction Scheme

Target: 15 GW installed capacity in 2030 (accumulated North and Baltic Sea)

Transition phase 2021 to 2025:

- Open for existing projects (located in North Sea zone 1 and 2 and Baltic Sea)
- One auction each in 2017 and 2018, 1.550 MW each
- Maximum bid price: 10 ct/kWh; Bid Bond: 100 €/kW
- Commissioning:

  2021-2022: 500 MW pa (2021 Baltic Sea only!), 2023-2025: 700 MW/a

The Central Model 2026 to 2030:

- One auction per year starting 2021, 700-900 MW per year
- Commissioning starting from 2026
- Pre-explored sites only (eligibility, potential capacity in MW)
- Maximum bid price: **lowest** awarded price in 2018
- Bid Bond: 200 €/kW

Wind offshore

Results

First auction (1st April 2017)

Bid / Offshore-Windpark*	Position	Awarded amount	Awarded price
DONG Energy Borkum Riffgrund West II GmbH	North Sea Cluster 1	240 MW	0,00 ct / kWh
DONG Gode Wind 03 GmbH	North Sea Cluster 3	110 MW	6,00 ct / kWh
DONG Northern Energy OWP West GmbH	North Sea Cluster 1	240 MW	0,00 ct / kWh
EnBW He Dreiht GmbH	North Sea Cluster 7	900 MW	0,00 ct / kWh
	Total	**1.490 MW**	

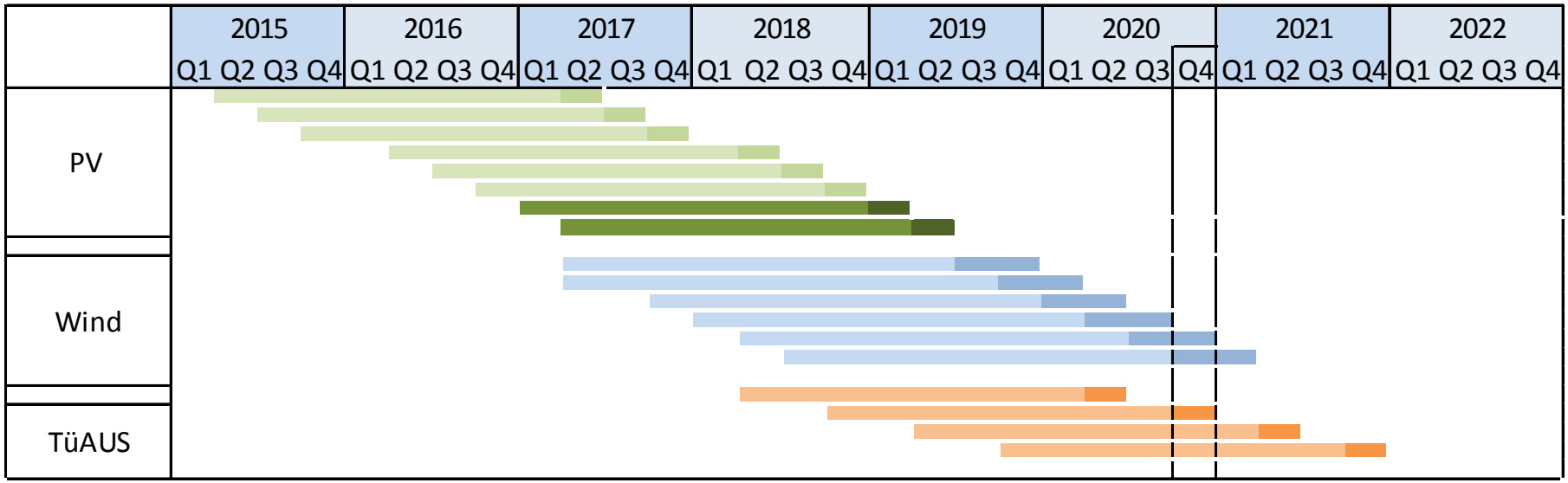
Wind offshore

Lessons learnt?

3/4 projects → 0,00 cent/kWh

- → Successful Bidders: Large Companies (with public involvement): Who bears the risks?
- → Commissioning after 2020
  - Bet on higher electricity tariffs at stock exchange at the time of commissioning!
  - Bet on lower cost/kWh through technical innovation (rotor size, capacity)?
- → Transition phase auction: 1.490 MW awarded
  - Intense competition (23 projects, 6.000 - 7.000 MW)
  - Sunk cost?
- → Realization rate ?

Auction Schemes: a success?



→ Solid evaluation not possible before 2020. Important criteria:
- → Efficiency
- → Realization rate
- → Acceptance (fundamental for Energiewende)

→ Preconditions:
- → Close monitoring of auction results is necessary
- → Political ability to respond fast is necessary (e.g. energy communities)

Thank you very much!

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