

# Power purchase agreements: a rising route to market for German renewables?

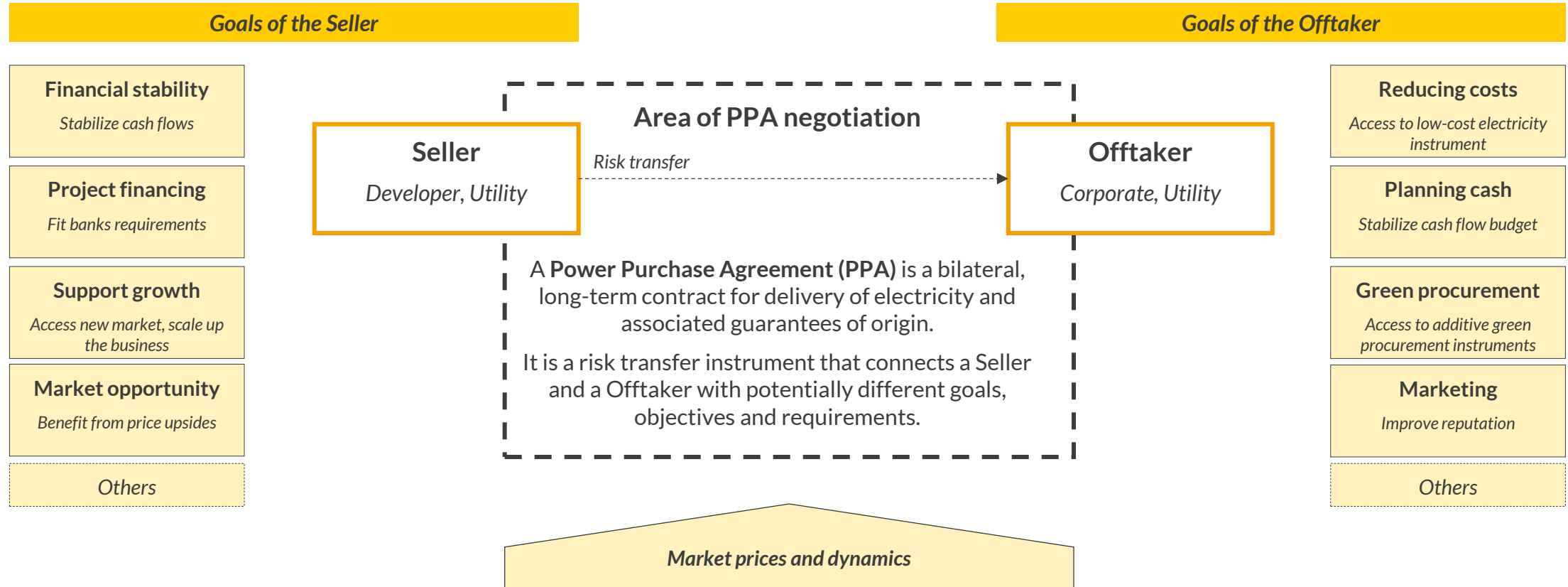
Strommarkttreffen

11 April 2025



# A PPA is a long-term contract for exchange of electricity and guarantees of origin and functions as a risk transfer instrument to enable asset financing

Typical Seller and Offtaker's goals on a PPA transaction



# PPA markets in Germany increasingly challenging for suppliers due to overall price sensitivity in the market

1

Majority of RES<sup>1</sup> buildout still through EEG, **increasing share** of pipeline to be **marketed via PPA**. Majority of offshore wind (0-bid auctions) and increasingly **solar** with sometimes **>50% of development pipeline** allocated to this route-to-market.

2

Demand for clean energy from corporate offtakers still strong. Current macroeconomic situation leads to **higher price sensitivity on corporate side**, pricing more offensively in PPA negotiations.

3

Surge in buildout of (rooftop) **Solar PV** leads to **strong downwards price pressure** for solar capture prices, resulting in reduced willingness to pay for Solar PaP<sup>2</sup> PPA. Especially utilities price in further cannibalisation risk, leading to reduced prices of up to 5-10 €/MWh.

4

Price situation for Solar PV PaP<sup>2</sup> PPA leads to **developers exploring alternative PPA models**. Hot topic of **co-locating (cheap) battery storage** to increase PPA capture price and salvage existing grid connection explored by many players in the market.

5

**Offshore Wind** developers seeking to **validate earnings potential** of projects **via PPA** before going into auctions – long project development cycles (COD 2030+) challenging to meet with PPA commitments, especially from corporate offtakers.

6

Aside from price levels, **biggest hurdle today** still the **complexity and transaction cost** of signing a PPA. Complexity in **pricing, legal setup** and **lack of standardization** especially difficult for smaller assets or corporate offtakers in the beginning of their PPA journey.

## Our initiatives in the space

Launch of *Lumus PPA pricing software* to enable PPA pricing and calibration based on Aurora's fundamental power market scenarios



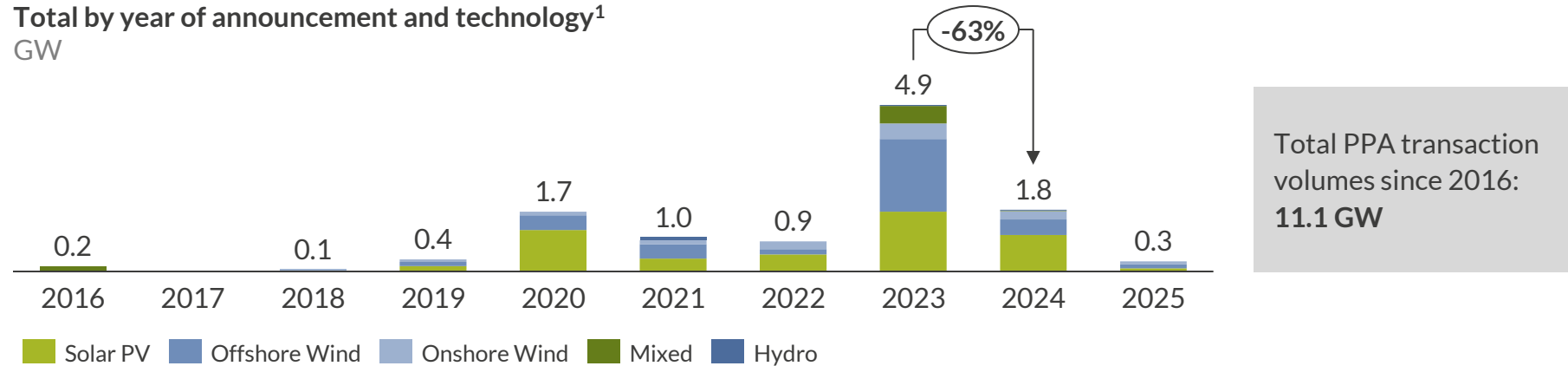
LUMUS  
for PPAs

Launch of large-scale **Multi-Client-Study** to explore feasibility and business case of **hybrid and shaped PPA models**, including battery storage and secondary markets.

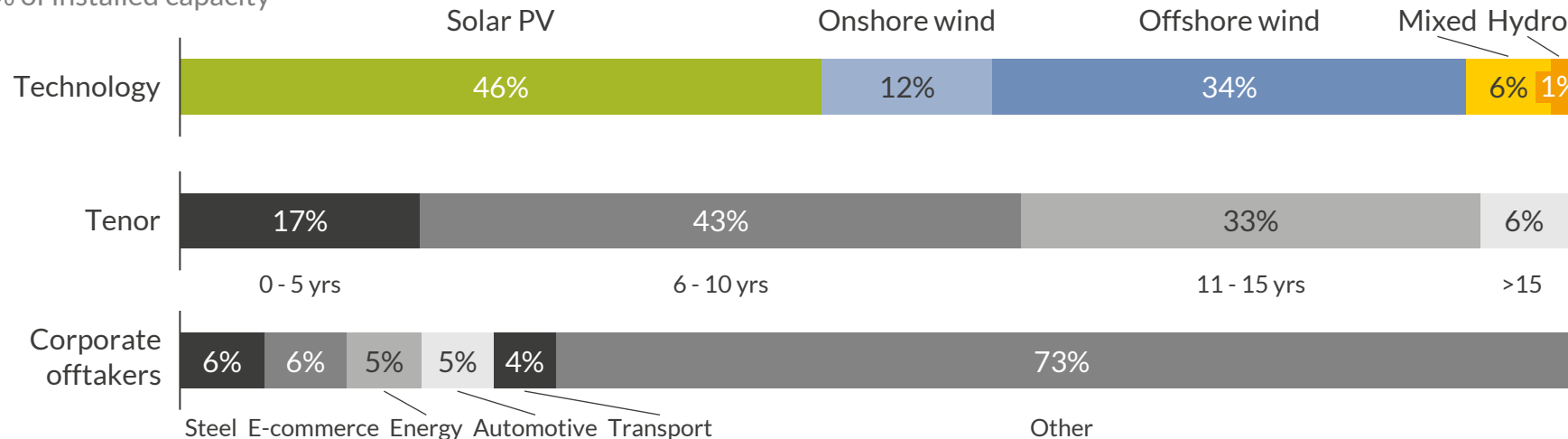
1) RES = Renewable Energy Source, 2) PaP = Pay-as-Produced

# While PPAs were in high demand during the energy crisis, the market has cooled down in 2024

Total by year of announcement and technology<sup>1</sup>  
GW



Contracted PPA capacity in Germany<sup>1,2</sup>  
% of installed capacity



- The volume of announced PPA deals fell by 63% from 2023 to 2024, mainly attributed to a drop in utility PPA due to lower prices.
- Solar PV is the main technology for PPA deals in Germany in terms of contracted capacity, accounting for 46% of total contracted capacity.
- Tenors between 6 and 10 years are most common for PPAs in Germany.
- Major steel player is the largest corporate offtaker with close to 700MW in contracted PPA capacity, followed by E-commerce with 660MW in PPAs (of which 610MW from offshore wind).
- 73% of PPA capacity with disclosed offtakers are signed by corporates including major steel producers, and large IT and mobility companies.

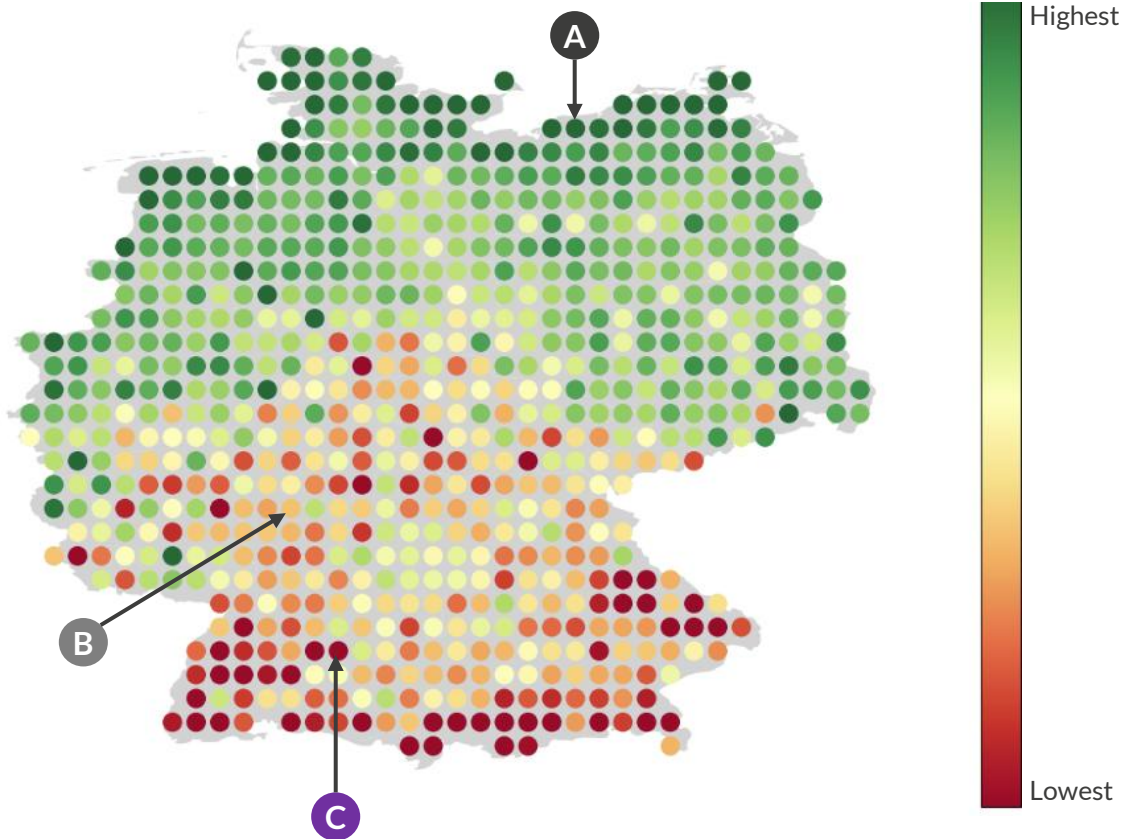
1) Based on public announcements and Aurora insights as of March 2025. 2) Weighted by capacity for all categories.

# Onshore wind PPAs are only profitable in high yield locations but cannot compete with the market premium, even at a reference value of 55 €/MWh

**1** We assess three locations - in the north, middle and south of Germany - as location has a decisive impact on onshore wind business cases.

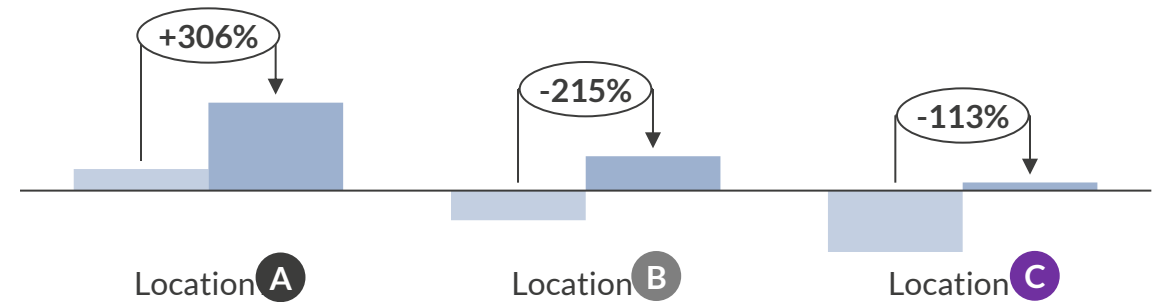
Annual average gross margins – merchant onshore wind assets<sup>1,2</sup>  
k €/MW (nominal)

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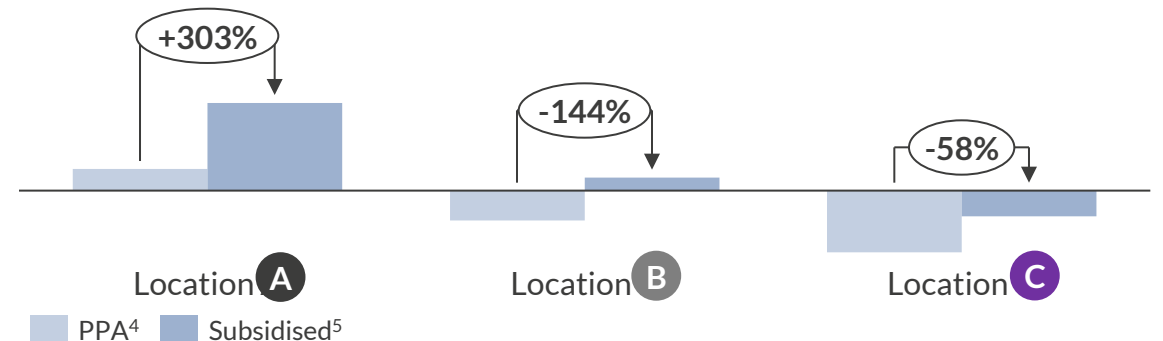
**2** Across all locations, the subsidised business model yields higher returns than PPAs due to lower capital costs.

NPV<sup>3</sup> by business case (subsidy strike price at 73 €/MWh) – onshore wind  
k €/MW (nominal)



**3** Even if uncorrected EEG strike prices drop from 73 €/MWh to 55 €/MWh, financial returns from PPAs cannot compete with those of subsidies.

NPV<sup>3</sup> by business case (subsidy strike price at 55 €/MWh) – onshore wind  
k €/MW (nominal)



1) Assessment is based on Enercon E160/5500 EP5 with 166.7m hub height and commission operation date in 2027. 2) Assuming 27 years of lifetime and commercial operation date in 2027. 3) Net present value. 4) Assuming an asset with a 10-year pay-as-produced PPA starting in 2027 and a merchant tail from 2037. 5) Assuming a merchant tail after the 20-year subsidy period expires.

Sources: Aurora Energy Research, Erneuerbare-Energien-Gesetz, Marktstammdatenregister

## Details and disclaimer

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### Publication

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