

JULY 2025

Focus on Germany's 2025 Offshore Wind Auction



federal Association
Wind energy
Offshore eV



Agenda

- 1 Green Giraffe Advisory**
- 2 The offshore wind journey
- 3 The German OW auction

2

6

15



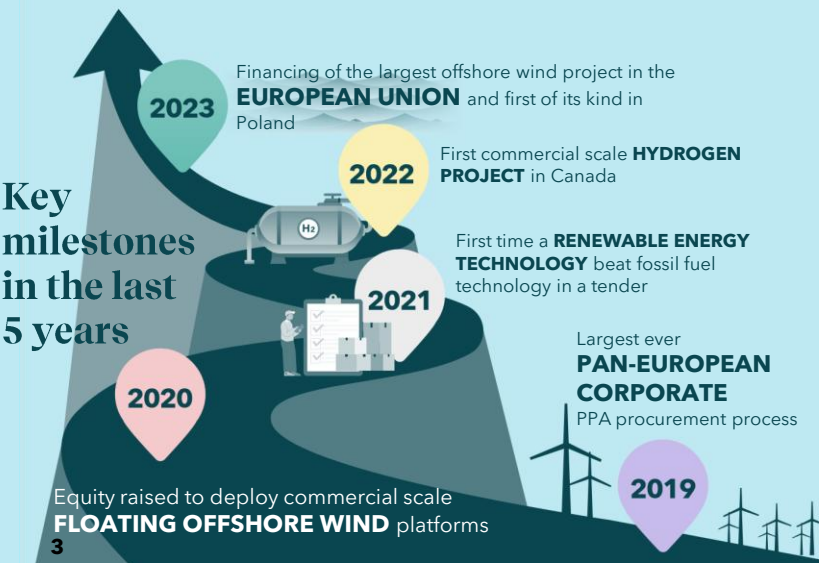
Introducing Green Giraffe Advisory



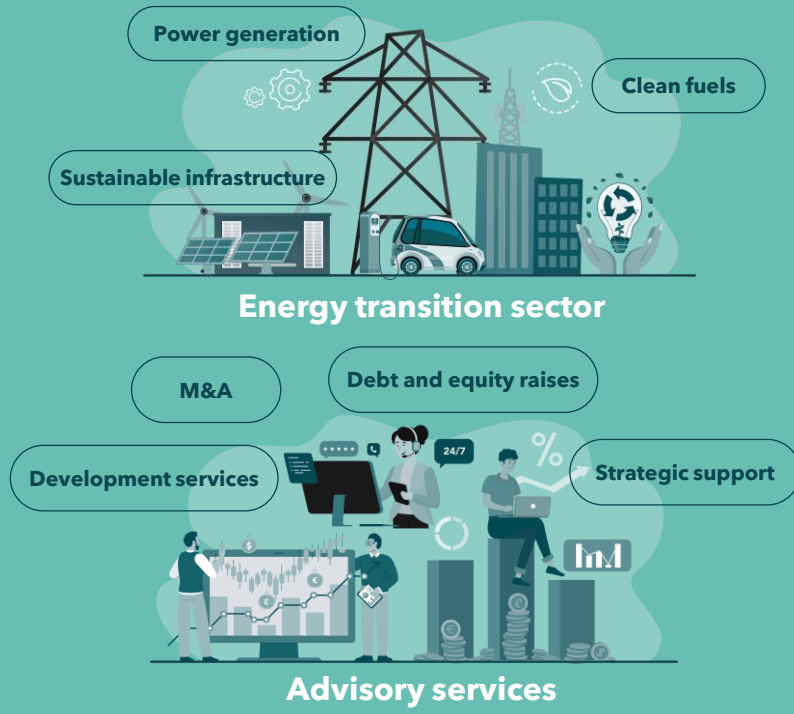
Finance pioneers shaping the energy transition

400+ transactions and projects
310+ GW total capacity

Key milestones in the last 5 years



Overview of sectors and services



Equity and debt raised



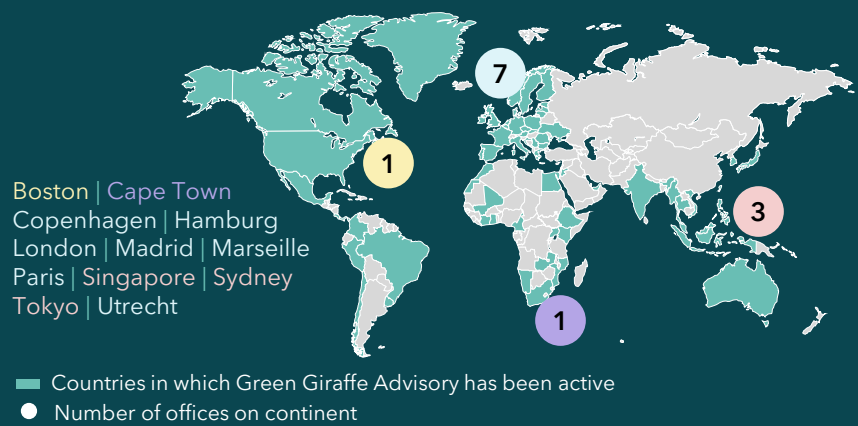
More than
EUR 45 bn
funding raised over
15 years
of financial advisory

Our team

140+
professionals globally in
12
offices across
5
continents



Green Giraffe Advisory presence



GW per continent



We are the premier financial advisor for offshore wind globally



Over **EUR 27 billion** raised or refinanced

Closed first ever greenfield project financed OW

Closed **25** floating OW transactions globally



2010 First billion-euro financing for OW

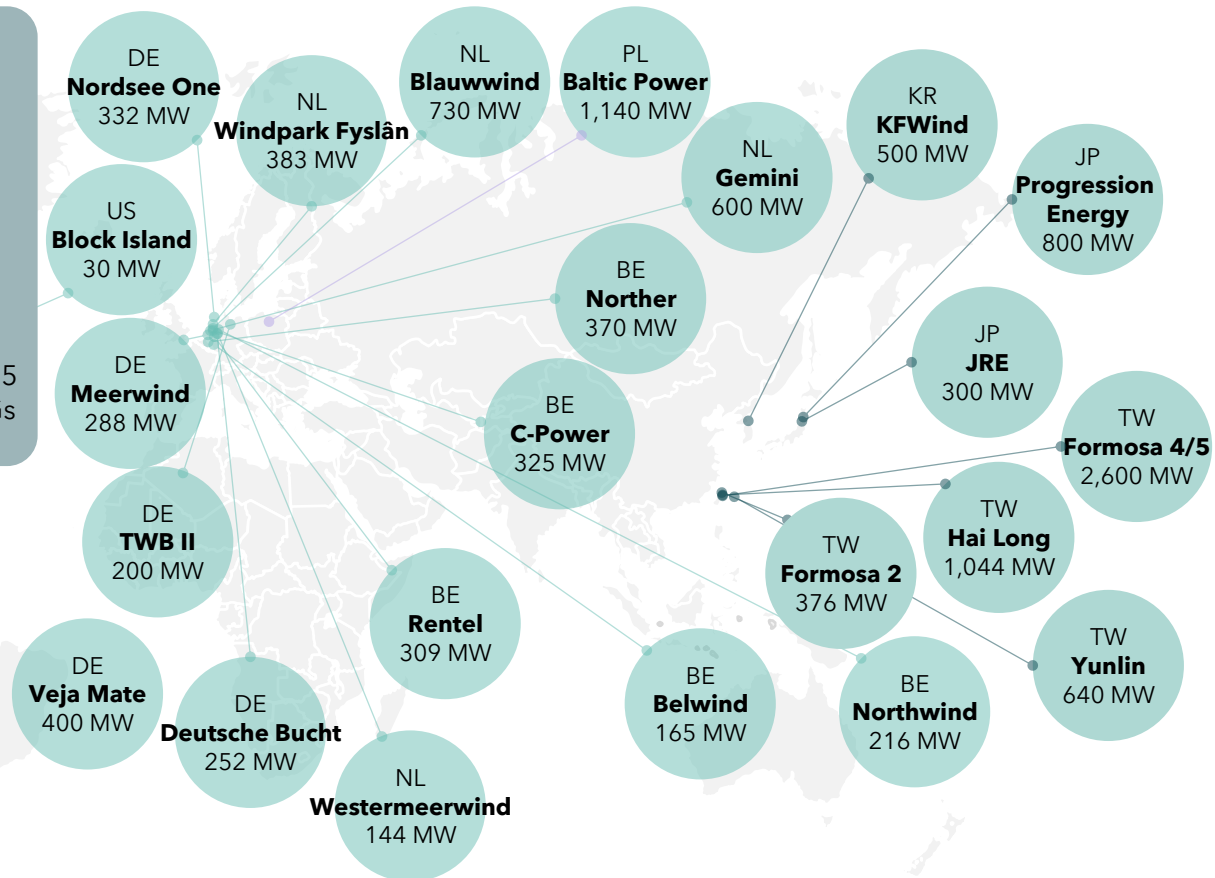
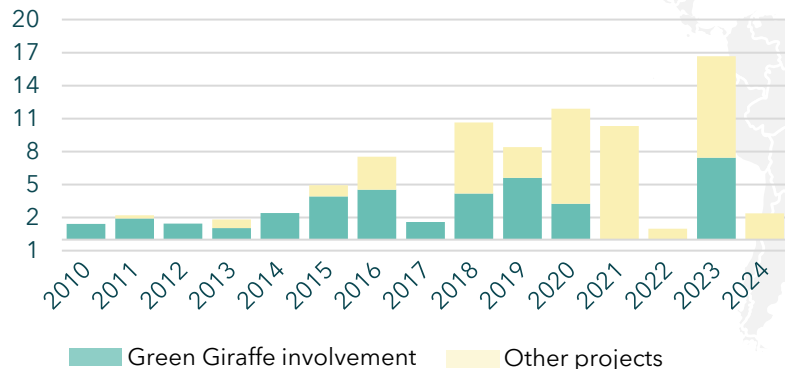


2014 First two-billion-euro financing for OW



2012-23 First 5, 6, 8, 9.5 & 15 MW offshore WTGs financed

Cumulative debt amounts (EUR bn) - Offshore fixed (excl refinancing)



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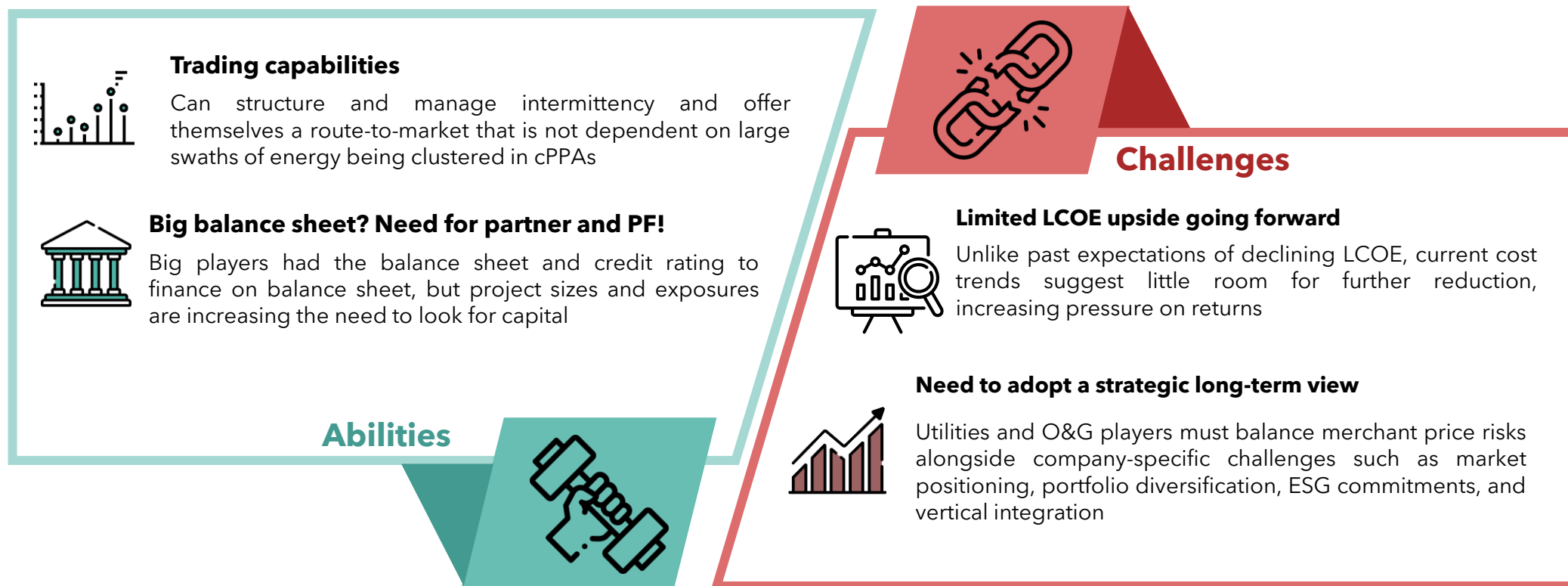




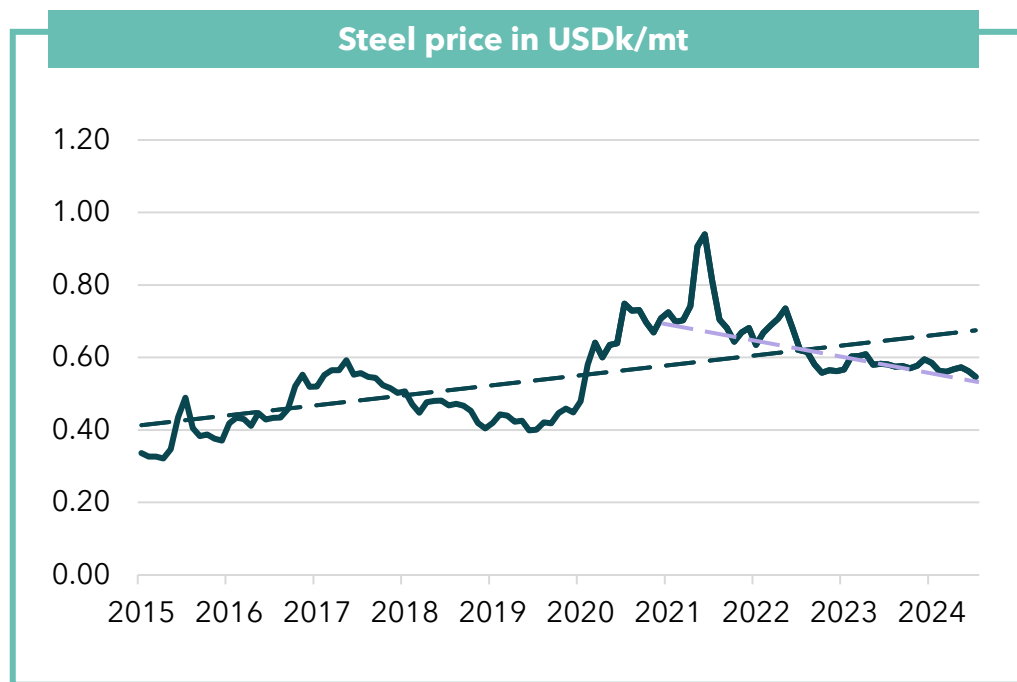
What motivates Utilities and O&G players to submit negative bids in German Offshore Wind Auctions?

With LCOE's plummeting until 2017 and decarbonization high on the political agenda over the past decade, Utilities and O&G stepped up and took a long-term electricity price risk without regulatory support

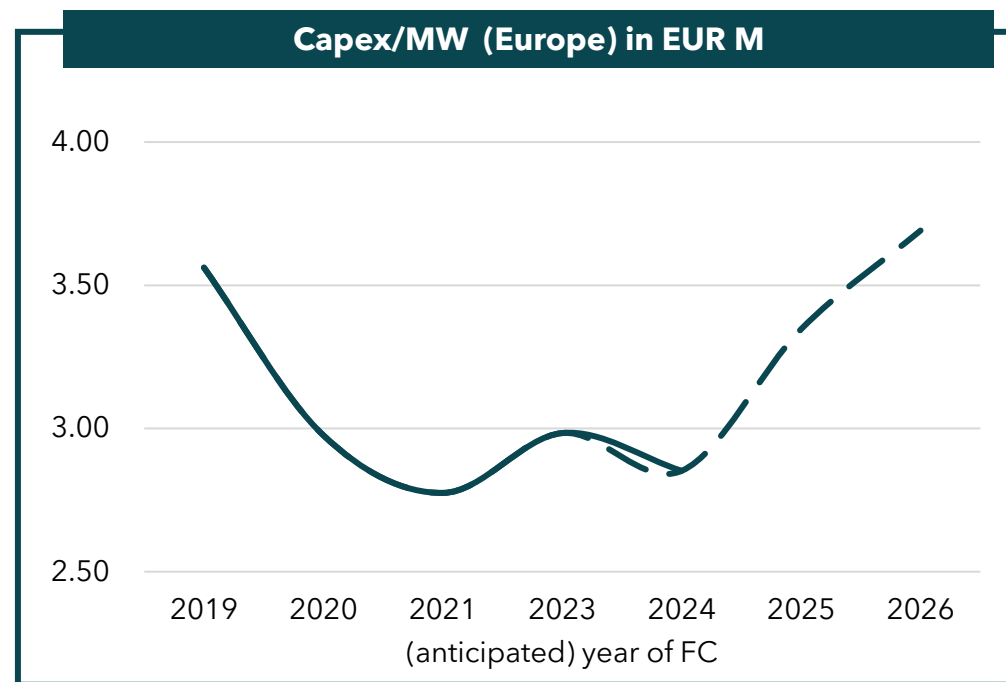
However, with costs now rising, a new question emerges: what continues to motivate these players to take on such risk?



Capex for offshore wind are expected to remain elevated driven by long term commodity outlook



Steel price and commodities surged as consequence of the Russo-Ukrainian war



Green Giraffe data using first-hand insights for projects currently in development show a visible upwards trend as a result of heightened uncertainty, supply chain issues

Source: London Metal Exchange; 4C Offshore; Green Giraffe intelligence

Notes: Capex figures include UK, but exclude grid connection costs

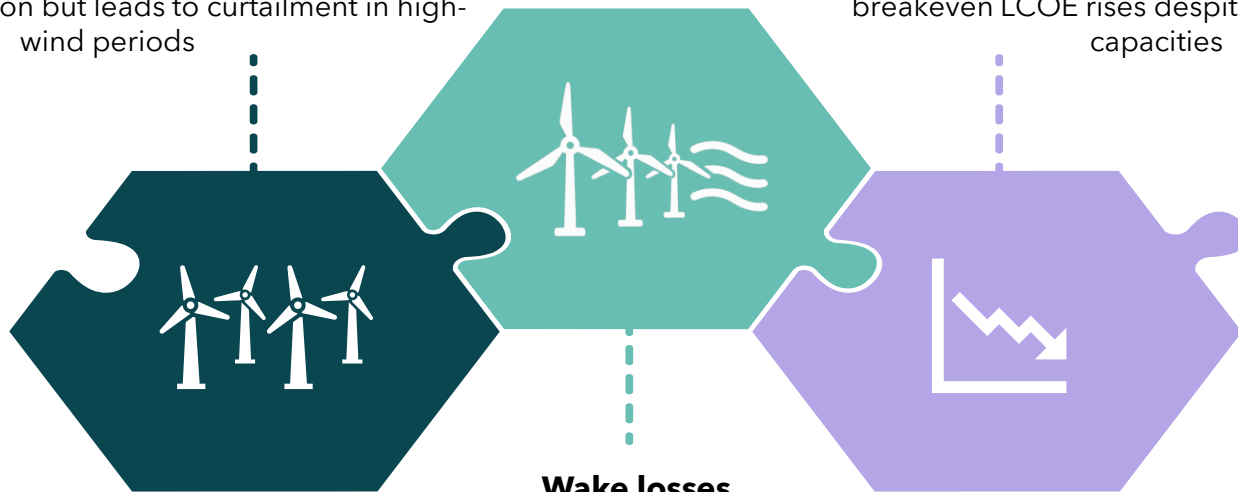
Overplanting and wake effects are expected to increasingly lead to power output losses

Overplanting

Introduced with Germany's 2025 N-9.4 auction, overplanting mandates 10-20% more installed capacity than grid capacity. It improves grid connection utilization but leads to curtailment in high-wind periods

Impact on Capex / MWh

Increasing capacity raises Capex but overplanting and increased wake losses reduce marginal output. As delivered energy grows slower than investment, breakeven LCOE rises despite larger installed capacities



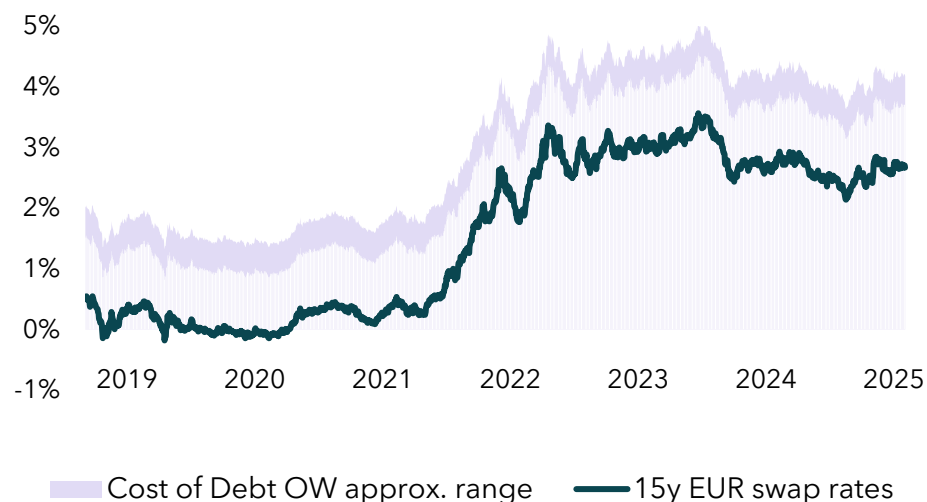
Wake losses

Upstream turbines slow wind and increase turbulence, cutting output for downstream turbines. Wake losses grow with tighter spacing and aligned winds, reducing total production in large offshore farms

Site-specific factors play a growing role in shaping project returns

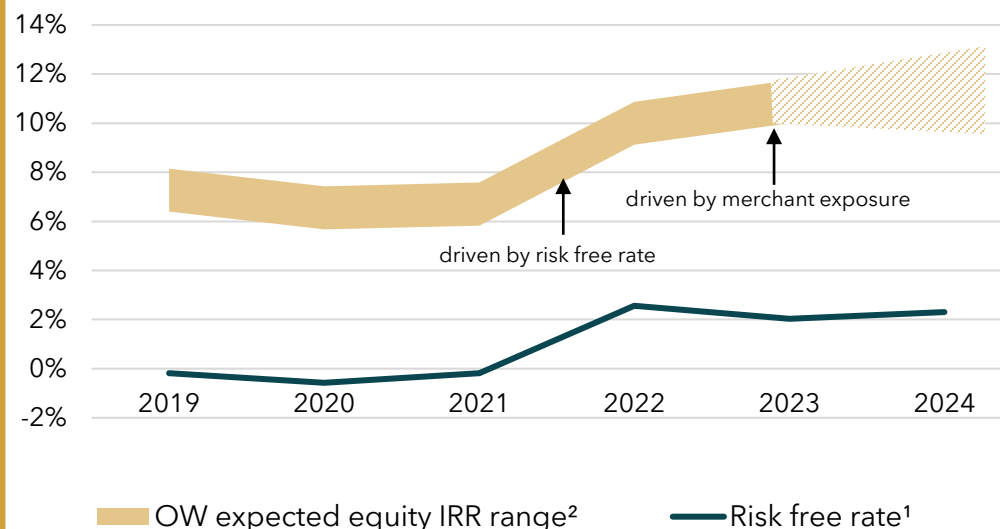
Base rate rise increased financing costs, merchant component introduced additional return premia

German offshore wind - base rate & credit spread



Interest rates rose sharply in response to inflation driven by COVID monetary policy, supply disruptions, and the energy crisis after Russia's invasion of Ukraine. While central banks have started cutting rates, financing costs remain elevated

Expected return range for offshore wind in Germany



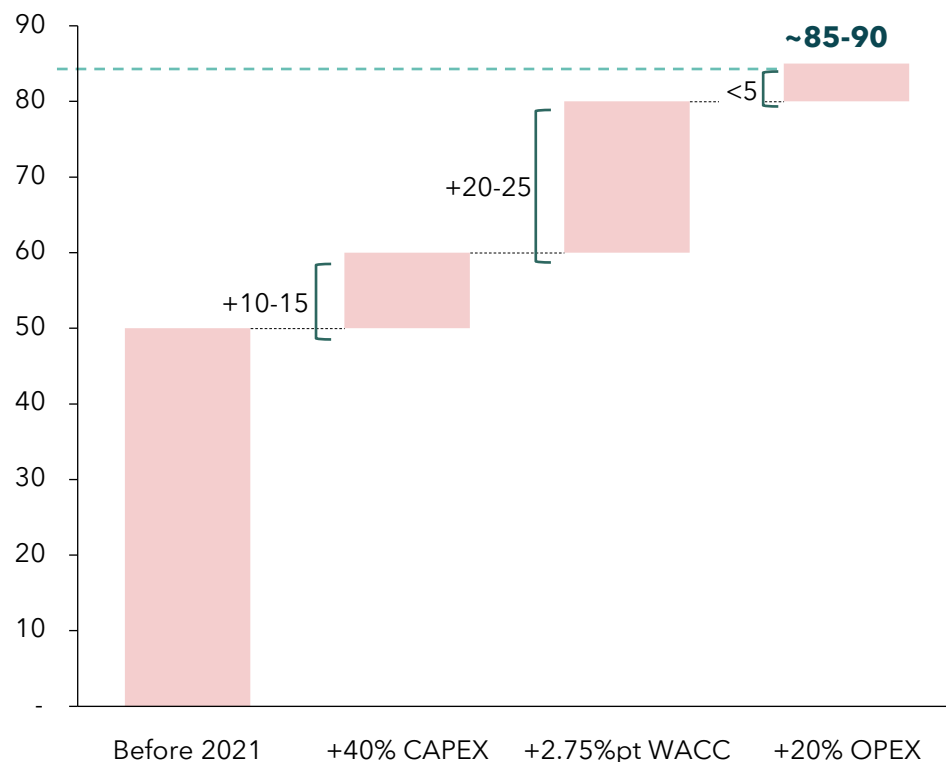
Offshore wind cost of equity is derived by adding asset-specific risk, development / construction risk, market risk premium and financing strategy to the risk-free rate. Research represents confidence interval using public data combining Green Giraffe intelligence

1) 10-year Bunds, 2) as of financial close | Sources: Statista, Damodaran, PwC, KPMG, Green Giraffe intelligence

Electricity price forecasts have been revised downwards to reflect evolving fundamentals

Not only did LCOE rocket up 80%...

Impact of various factors on LCOE (EUR/MWh)

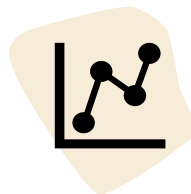


Source: Green Giraffe analysis; N.B. WACC increase between 2.50% and 3.00%

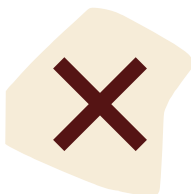
...electricity prices under-performed and became more volatile



Electricity prices forecasts have decreased every year



Volatility and intermittency risks have increased across core markets

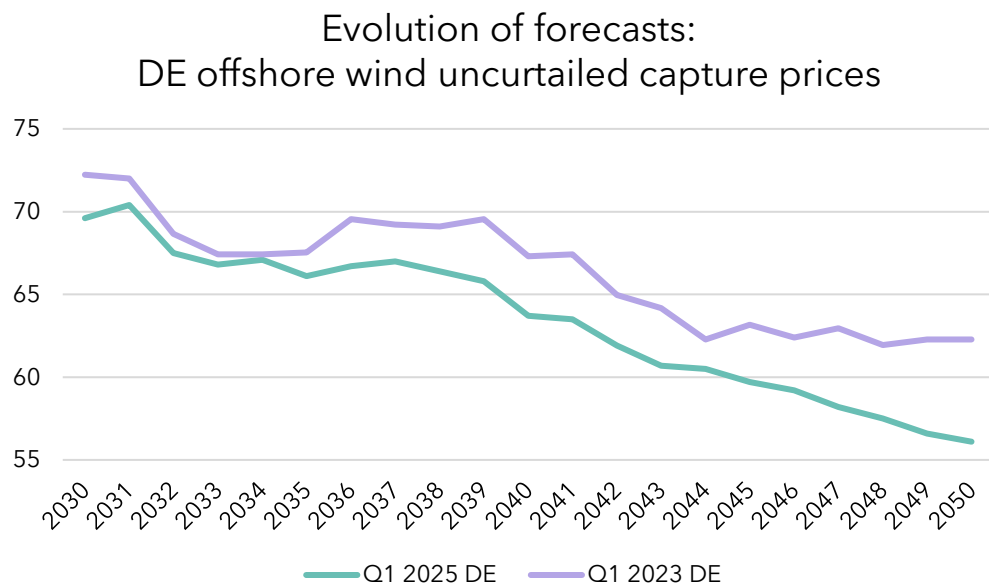


All of this has created significant business case challenges

German power price forecasts increasingly reflect cannibalisation and negative price events

Power price forecasts are factoring in an increasing amount of cannibalisation and negative prices

Power demand difficult to quantify, pointing at widespread AI adoption and wider electrification



ChatGPT Log in

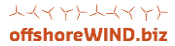
Summary & Takeaways

Trend	Impact
Electricity consumption	From ~18 TWh (2023) to ~30–37 TWh (2030) if AI growth continues
Regulation	Push for 100% renewables and heat reus in data centers by 2027–2028
Grid impact	Strains expected, requiring massive investment (€1 tr+), local restrictions
Renewables	Strong shift—PPA-driven green power ar on-site generation are key

Source: Green Giraffe intelligence; figures in EUR (2023 real)

We can now see why tenders with no revenue support scheme are failing

All this is reflected in the recent trend of failing tenders - project developers cannot absorb current risk allocation



Dutch Gov't Shelves Two Offshore Wind Tenders, Plans Single Site Auction, citing deteriorating market conditions
19 May 2025



Estonian government fails to agree terms for wind farm tenders
07 February 2025



Lithuanian Government suspends OWF tender to review consumer impact
29 January 2025



No offshore bids in Denmark – disappointing but sadly not surprising
6 December 2024



UK's net zero ambitions at risk after 'disastrous' OW auction
10 September 2023

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Results auction rounds since 2023 for areas with and without pre-investigation

Location	Capacity (MW)	Auction winner	Amount bid		Auction date	Commissioning date
			mEUR	kEUR/MW		
North Sea (N-9.4)	1,000	TotalEnergies	180	180	2025	2032
North Sea (N-11.2)	1,500	TotalEnergies	1,957	1,305	2024	2031
North Sea (N-12.3)	1,000	EnBW	1,065	1,065	2024	2031
Baltic Sea (O-2.2)	1,000	TotalEnergies	2,070	2,070	2023	2030
North Sea (N-11.1)	2,000	BP	3,660	1,830	2023	2030
North Sea (N-12.1)	2,000	TotalEnergies	3,750	1,875	2023	2030
North Sea (N-12.2)	2,000	BP	3,120	1,560	2023	2030
North Sea (N-10.2)	500	-	-	-	2025	-
North Sea (N-10.1)	2,000	-	-	-	2025	-
North Sea (N-9.2)	2,000	RWE & TotalEnergies	250	63	2024	2032
North Sea (N-9.1)	2,000	RWE & TotalEnergies			2024	2031
North Sea (N-9.3)	1,500	Luxcara	Unknown	Unknown	2024	2029
North Sea (N-3.5)	420	RWE	784	435	2023	2028
North Sea (N-3.6)	480	RWE			2023	2028
North Sea (N-6.6)	630	RWE			2023	2028
North Sea (N-6.7)	270	Luxcara			2023	2028
North Sea (N-7.2)	980	RWE	0	0	2022	2027

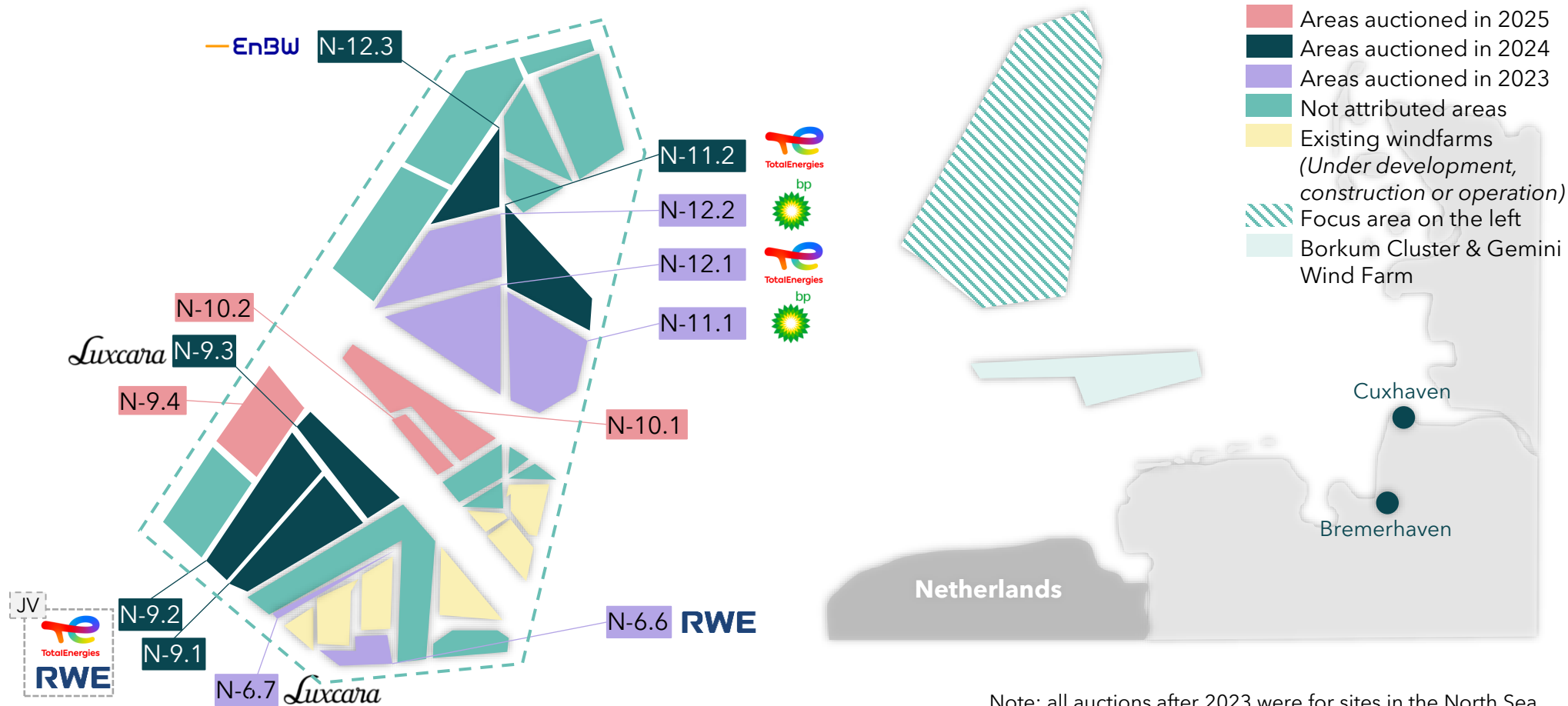
Not pre-assessed area

Pre-assessed area to be auctioned in August 2025

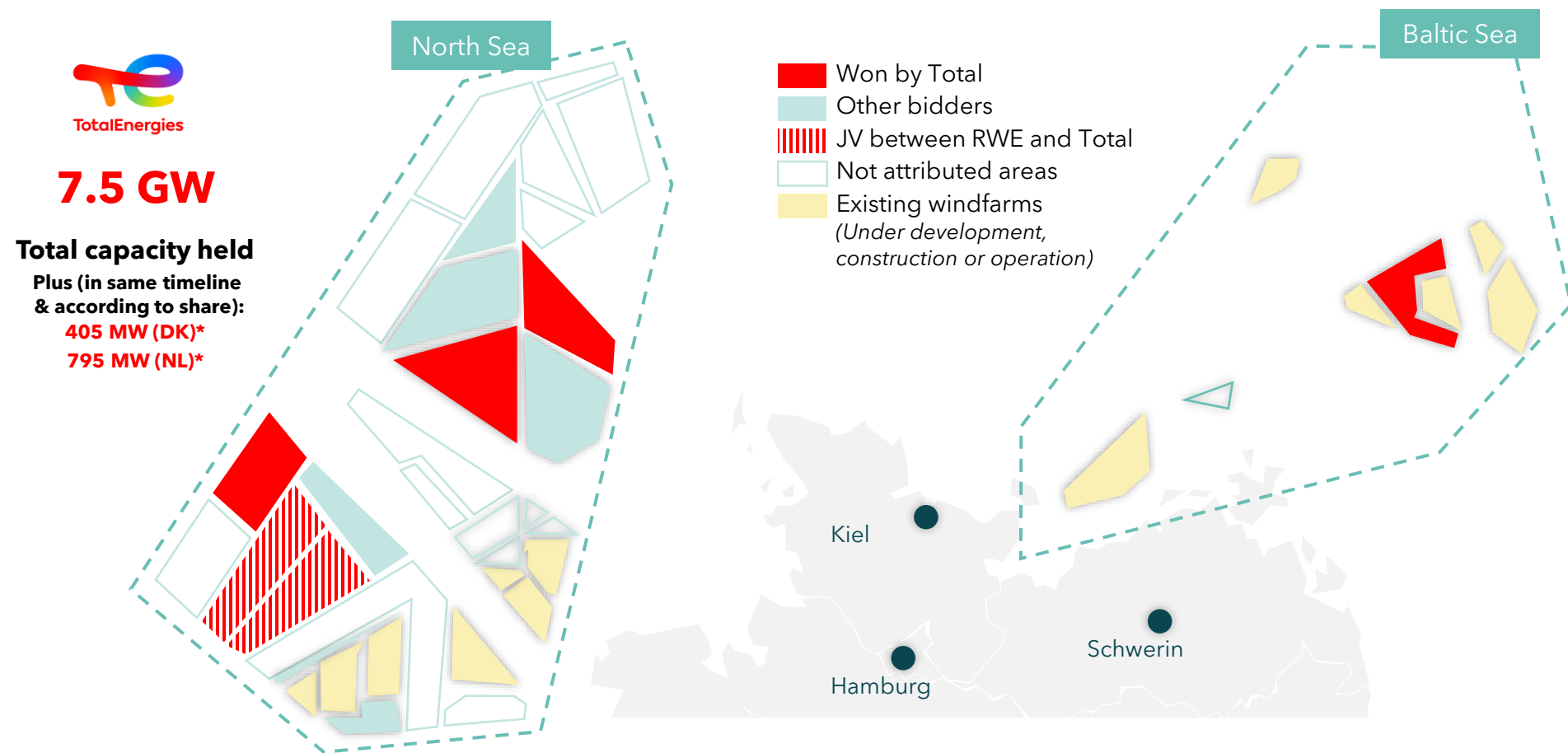
Pre-assessed area

After peaking in 2023, bid levels have declined but remain negative (for now)

Focus on North Sea sites: locations of the recently auctioned areas



Total now holds a total of 7.5 GW of locations in German offshore wind



*Capacity figure reflects projects with shared ownership

Compliance deadlines and penalties for offshore wind tenders in Germany

Lease payment

- Winner of the dynamic “cash bid” pays a fixed “lease-like” **long-term obligation**
- **10%** of the zero-subsidy bid is required to be paid up front; **remaining 90%** are split into equal installments starting COD
- Negative bid submission can be seen as an **option**, if project never reaches FC, bidders only risk their **deposit**, and the **up-front 10% levies** paid within one year of the auction

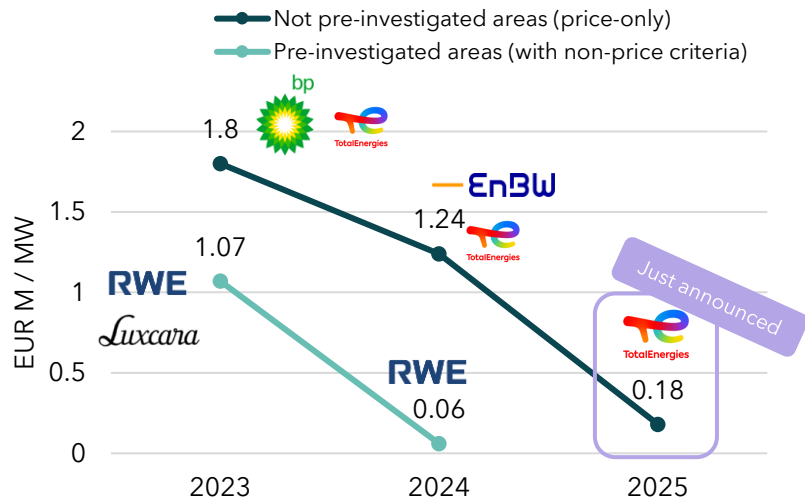
Bid-bonds

- Bidders must **deposit EUR 200/kW (pre-investigated) and EUR 100/kW (non-pre-investigated) of awarded capacity** as security
- 25% is due at bidding, the remaining 75% must be submitted within three months of the award
- Missing the deadline triggers a 25% penalty, which can be covered by the initial deposit

Batch	TotalEnergies' Exposure (as of today), EUR M		
	Bid bonds	Lease payment	Total
2023	300.0	582.0	1,770.7
2024	450.0	220.7	
2025	200.0	18.0	

Total is the clear winner of the Jun 2025 auction – what can we infer for the future?

Total is championing both the Jun 2025 auction and the DE offshore wind market in terms of GW..



- N.9.4. site represents a **prime location**
- 7.5 GW in development - Total will profit from **significant synergies**
- Obtention of the **lease at a significant discount** vs prior years
- **Upfront lease payment** amounts to **EUR 18 M**

... looking at other European examples and this years' participation, the attractiveness may become a concern



Move back to CfD scheme announced in May 2025 after no bids in 2024



Increase of the maximum strike price by 66% in 2024 after no bids in 2023



10x decrease of lease payment vs 2023 levels, only 2 bidders
How will 2026 look?

- Both Denmark and the UK have revamped their regimes after tenders that attracted no bids
- Like Denmark and the UK, Germany has ambitious offshore wind targets (30 GW in 2030 vs <10 GW currently installed)
- The German OW market is dominated by O&G and utilities – all of which will become limited in financing and offtaking capabilities



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