Offshore – Ausbau 2023 ff.
Was ist zu beachten und wie können Sie profitieren?

Till Schwarzlose

We are **#2 Offshore player globally** with vast experience in the business ...

~ 20 years in the Offshore business

3.3 GW net Offshore wind portfolio by end of 2022

110 years runtime of operating fleet

High-class partnerships

Excellent track record of delivering complex projects

842 turbines operated and maintained at sea

Among the **most successful winners** of **offshore** auctions

>10.000 man years of experience

Cutting edge technical capabilities

Unique commercialization capabilities

Our offshore assets in operation already amount to 3.3GW …

3.3GW² in operation

Assets

1 **Galloper**
UK, 353 MW[1] (88 MW[2])

2 **Greater Gabbard**
UK, 504 MW[1] (252 MW[2])

3 **Gwynt y Môr**
UK, 576 MW[1] (288 MW[2])

4 **Humber**
UK, 219 MW[1] (112 MW[2])

5 **London Array**
UK, 630 MW[1] (189 MW[2])

6 **Rampion**
UK, 400 MW[1] (200 MW[2])

7 **Rhyl Flats**
UK, 90 MW[1] (45 MW[2])

8 **Robin Rigg**
UK, 174 MW[1]

9 **Scroby Sands**
UK, 60 MW[1]

10 **Triton Knoll**
UK, 857 MW[1] (506 MW[2])

11 **Thornton Bank**
BE, 325 MW[1] (87 MW[2])

12 **Alpha Ventus**
DE, 60 MW[1] (16 MW[2])

13 **Amrumbank West[3]**
DE, 302 MW[1]

14 **Arkona**
DE, 385 MW[1] (193 MW[2])

15 **Nordsee One**
DE, 332 MW[1] (50 MW[2])

16 **Nordsee Ost[3]**
DE, 295 MW[1]

17 **Kaskasi[4]**
DE, 342 MW[1]

18 **Rødsand 2**
DK, 207 MW[1] (41 MW[2])

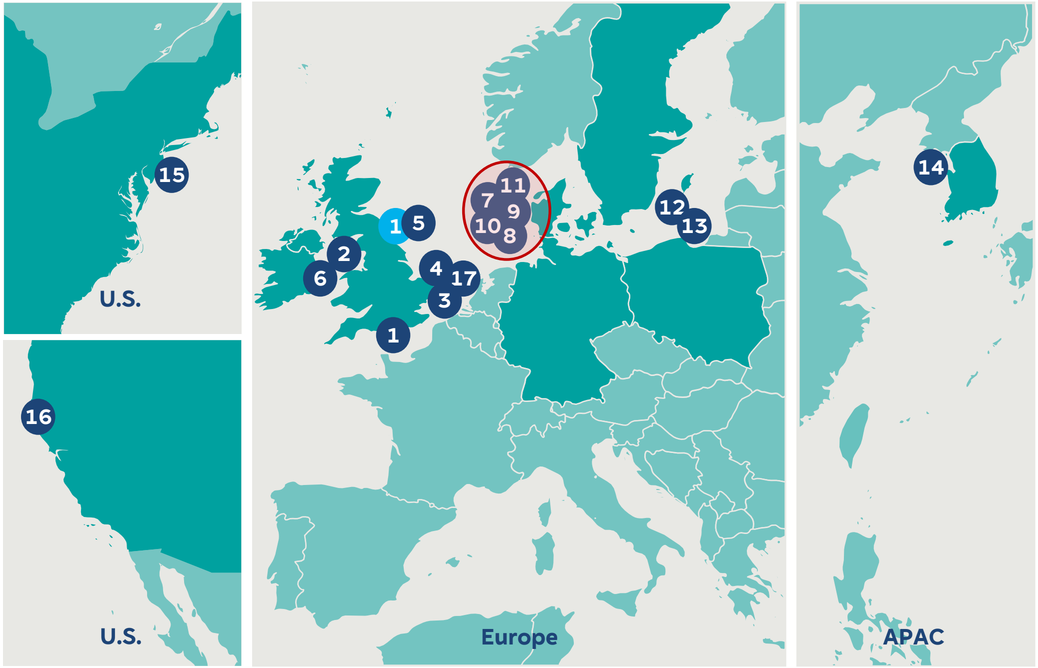
19 **Kårehamn**
SE, 48 MW[1]

RWE footprint in Offshore Germany

1 Total installed capacity | **2** Owned renewables capacity as of December 2022. Pro rata capacity | World map not set to size and proportion | **3** Power fully sold | **4** Power about to be sold

… and we are well on track expanding our business globally

~18.5 GW[1] in development & under construction



RWE footprint in Offshore Germany

In development

1. **Rampion 2** UK, 1,200 MW[1] (601 MW[2])
2. **Awel y Môr** UK, 576 MW[1] (346 MW[2])
3. **Five Estuaries** UK, 353 MW[1] (88 MW[2])
4. **North Falls** UK, 504 MW[1] (252 MW[2])
5. **Dogger Bank South** UK, 3,000 MW[1]
6. **Dublin Array** IE, 900 MW[1] (450 MW[2])
7. **N-3.5** DE, 420 MW[1] (214 MW[2])
8. **N-3.6** DE, 480 MW[1] (245 MW[2])
9. **N-3.7** DE, 255 MW[1]
10. **N-3.8** DE, 433 MW[1] (221 MW[2])
11. **Thor** DK, 1,000 MW[1]
12. **Södra Victoria** SE, 1,600 MW[1]
13. **FEW Baltic II** PL, 350 MW[1]
14. **Seohae** KOR, ~500 MW[1]
15. **New York Bight** US, ~3,200 MW[1] (2,300 MW[2])
16. **California, Humboldt Bay** US, ~1,600 MW[1]
17. **Hollandse Kust West VII** NL, ~760 MW[1]

Under construction

1. **Sofia** UK, 1,400 MW[1]

1 Total installed capacity | **2** Pro-rata owned renewables capacity as of December 2022. Pro rata capacity | World map not set to size and proportion

Green power produced by offshore wind: a perfect match for industrial demand in Germany

Stable Profile

… **Stable Offshore wind conditions** are perfect for **reliable, affordable power production**

Utility scale

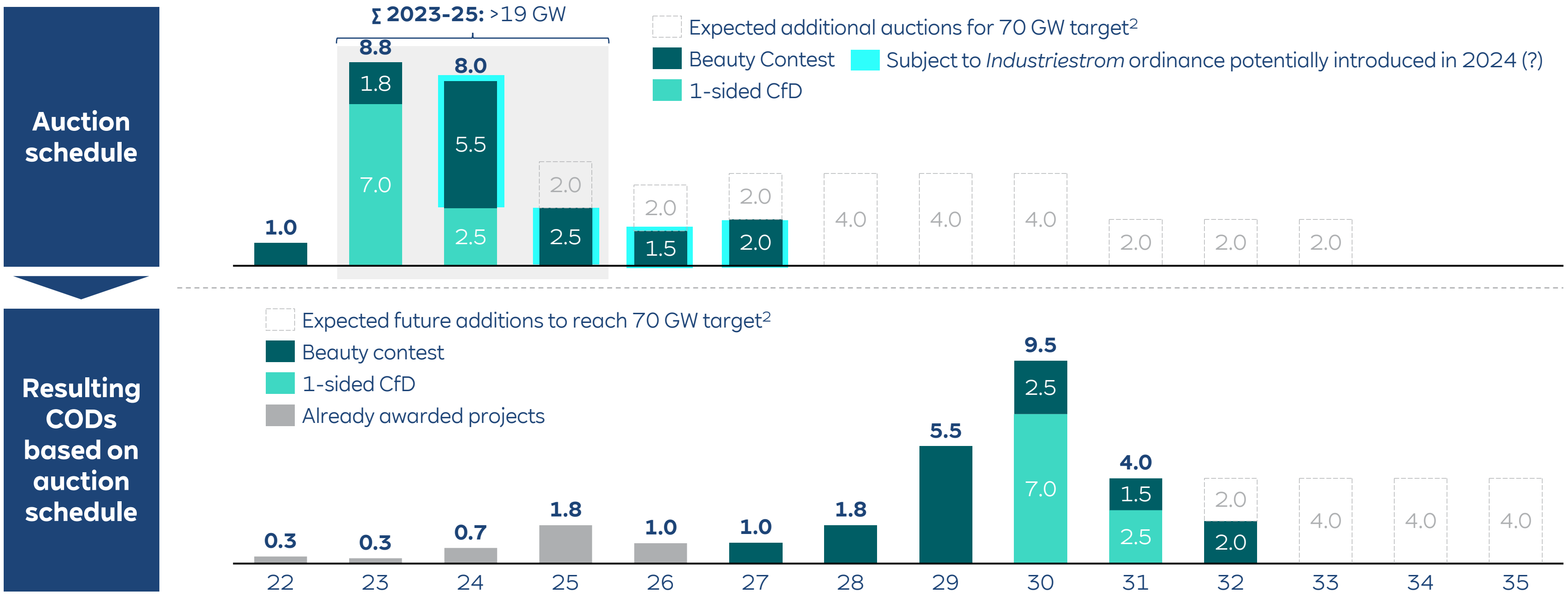
… Offshore wind **parks** in Germany **reach capacities of up to 2GW,** making them a **perfect match for large scale industrial demand**

Clear build-out path

… **Germany** with very **ambitious build-out targets** of reaching **30GW by 2030** starting from only 8GW today

More than 19 GW expected to be auctioned in two different pathways in next 3 years

Auction schedule and envisaged buildout according to FEP[1] (GW/year)



1 Flächenentwicklungsplan (FEP) as published in January 2023; 2 Estimation according to intermediate FEP draft as published in July 2022.

According to WindSeeG, sites will be distributed via two different auction systems – experience crucial for success

Pre-investigated sites (Beauty Contest)

Auction publication: **01 March**
Auction date: **01 August**
Auction regime: **Beauty Contest**

60 pts.	**Price bid**[1]
10 pts.*	Contribution to **decarbonization of offshore development**
10 pts.	Declaration re. PPA with third parties
10 pts.	Share of innovative foundations instead of **impulse ramming** and **gravity foundations**
10 pts.	**Share of apprentices** in total workforce

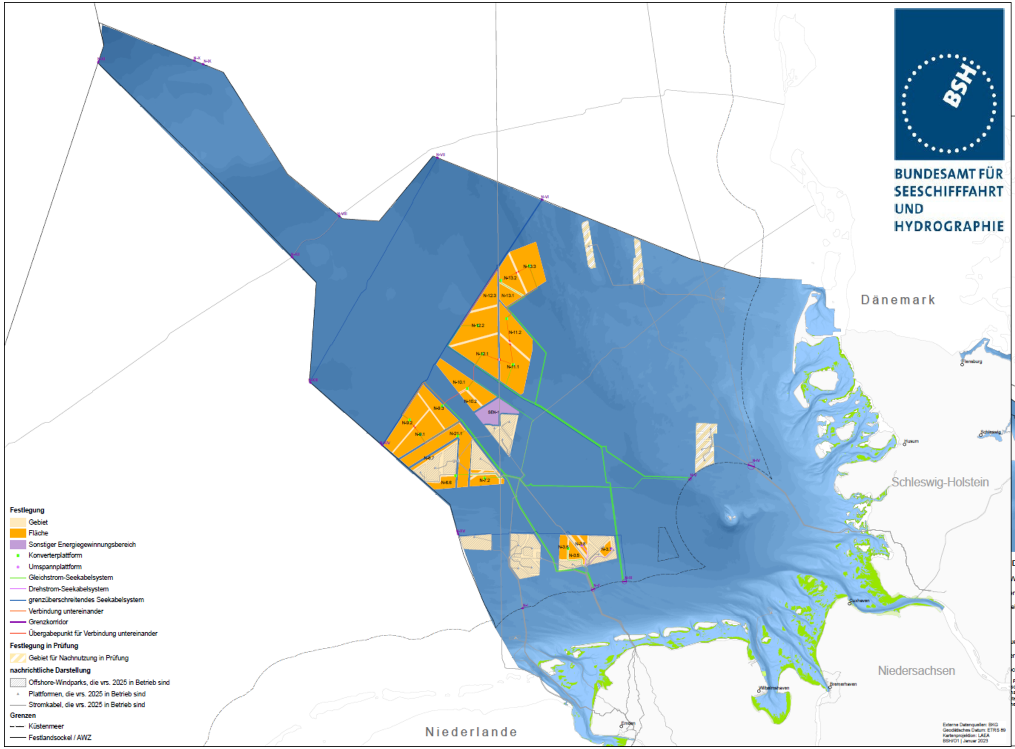
Not pre-investigated sites (CfD)

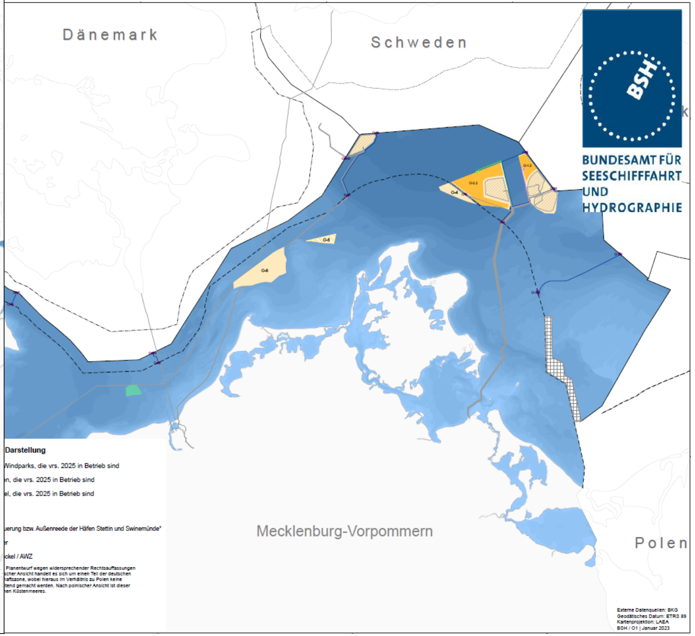
Auction publication: **01 February**
Auction date: **01 June**
Auction regime: **1-sided CfD/dynamic bidding in case of multiple zero bids** (“***CfD***”)

1st Stage	**1-sided CfD price bid + prequalification criteria:** min. 20% of auction volume shall be subject to a PPA share for min. 5 years
2nd Stage	In case of several 0 ct/kwh bids, **“dynamic auction”** for all bidders with 0 ct/kwh to determine final winner(s) – **negative bid component**.

Both pathways are fully merchant, thus entirely available for providing power directly to the industry.
Both pathways are affected by an uncapped negative bidding component

Majority of future projects to be located in Germany's North Sea

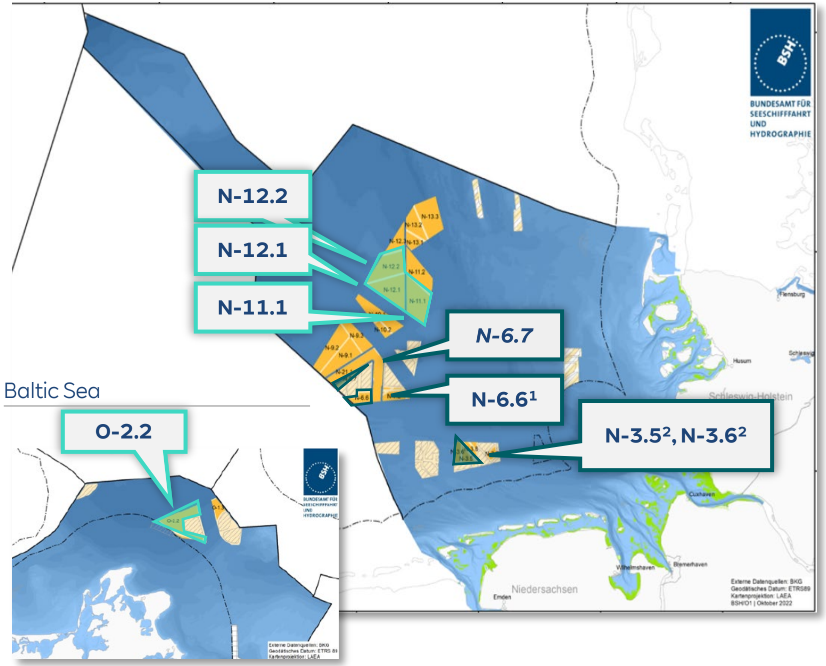




RWE well positioned for 2023 auctions which are offering unprecedented 8.8GW

Location overview for 2023 auctions

North Sea



Overview of project bid teams for 2023 auction

Category	Auction Date	COD	Site	Capacity (MW)
Not pre-developed sites (CfD)	June 2023	2030	N-11.1	2,000
			N-12.1	2,000
			N-12.2	2,000
			O-2.2	1,000
Pre-developed sites (Beauty Contest)	Aug 2023	2028	N-6.6[1]	630
			N-6.7	270
			N-3.5[2]	420
			N-3.6[2]	480

1 Vattenfall with step-in right **2** RWE & NPI JV (Nordseecluster) with step-in right.

Supply chain expected to be a big challenge achieving ambitious Offshore build-out targets across EU

Category	Current capacity in EU	Capacity needed to meet 2030 EU targets:	
Turbines	700 units/year	Up to 1,300 units/year	(x2)
Foundations (bottom fixed)	Up to 300 units/year	Up to 1,200 units/year	(x4)
Foundations (floating)	Up to 10 units/year	Up to 100 units/year	(x10)
Vessels (installations, cable)	68 Vessels in operation	124 Vessels in operation	(x2)

Projects from 2023 auctions in Germany with advantage as they would be first in line approaching/securing supply chain capacities

Technological know how and deep understanding of regulatory and commercial boundary conditions crucial for winning attractive projects

Success Factors

Deep understanding not only of **local wind conditions** but also the **effects of large-scale long-term build-out in the north sea crucial** to **reliably estimate annual energy production**

Thorough understanding of site-specific conditions important to understand **attractiveness** and strategic relevance **of sites** in order to determine **financially reliable bids**

Dynamic auction and beauty contest require vast global but especially German experience in order to be able to **successfully develop projects along both auction pathways**

Capability to provide structured offtake solutions beyond "pay as produced" (e.g. Baseload)