

# RWE

## **Up to the challenge: Industry perspective on offshore expansion goals**

**Dr. Joyce von Marschall, Head of Business Development Offshore Germany  
22 May 2023**

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



~ 20 years in the  
Offshore business



110 years runtime  
of operating fleet



3.3 GW net Offshore  
wind portfolio  
by end of 2022



Unique  
commercialization  
capabilities



High-class  
partnerships



Excellent track  
record of delivering  
complex projects



842 turbines  
operated and  
maintained at sea



Expertise along the  
whole value chain



>10.000 man years  
of experience

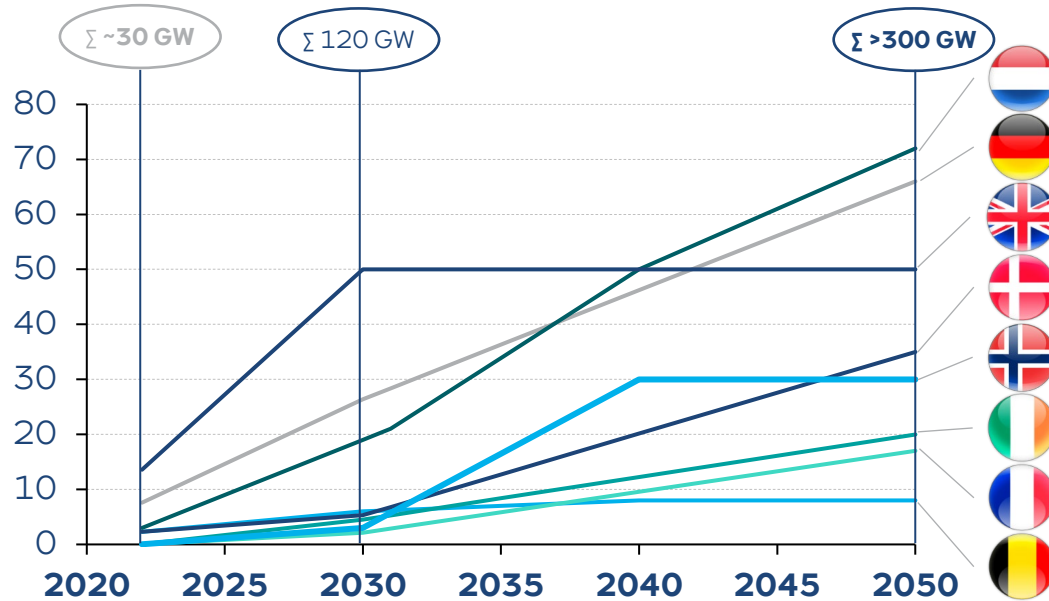


Cutting edge  
technical  
capabilities

# North Sea countries committed to reach 120 GW of offshore wind by 2030 and even more than 300 GW by 2050

## Offshore targets according to Ostend Declaration of Energy Ministers<sup>1</sup>

(Installed capacity, in GW)

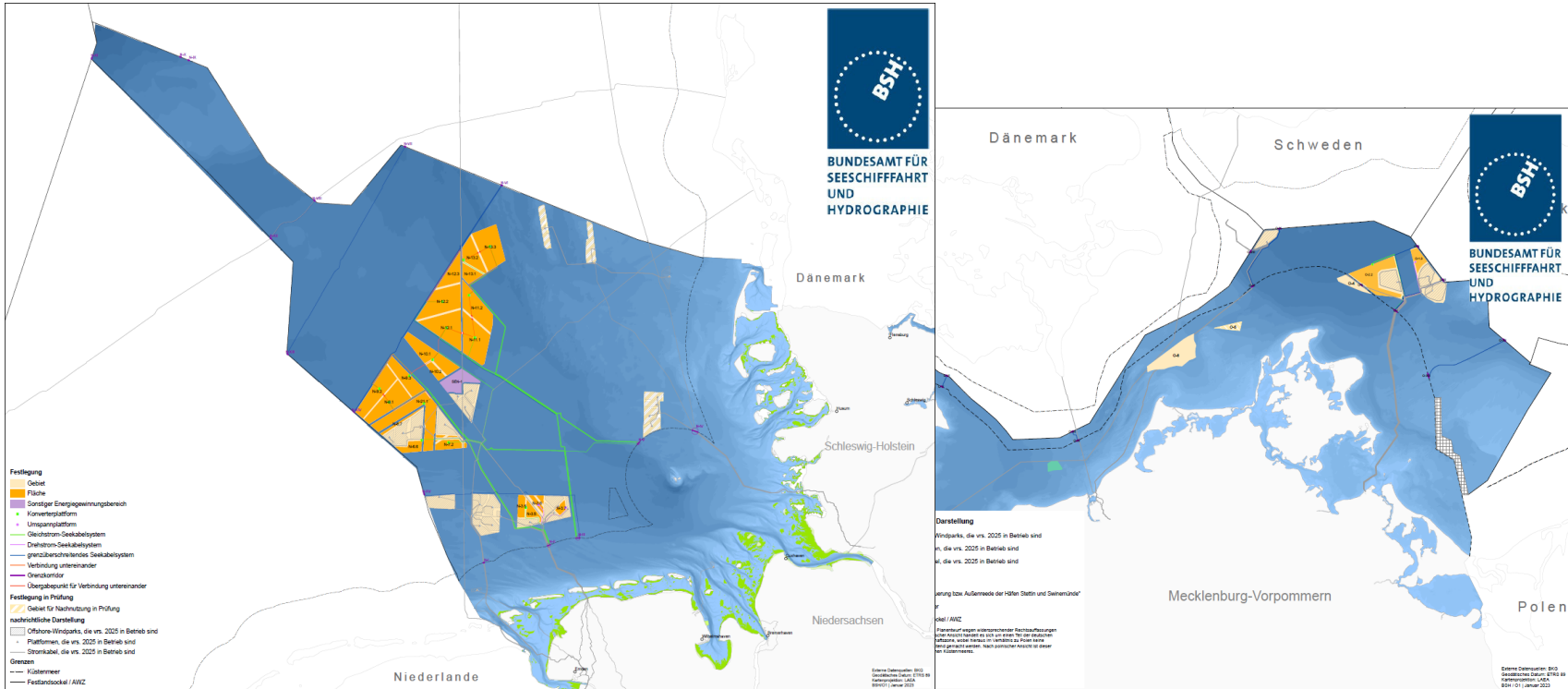


## Key Takeaways






- ✓ Ministers have set ambitious new aggregate targets of reaching **at least 300GW** of offshore wind energy **by 2050**
- ✓ **United Kingdom, Germany and Netherlands** with **most ambitious** growth targets
- ✓ **Steep ramp-up of installations until first half of 2030s**, afterwards constant high additions

<sup>1</sup> Source: „Ostend Declaration of Energy Ministers on the North Seas as Europe’s Green Power Plant“ as published on April 24, 2023; Note: Only targets as of declaration are shown.

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



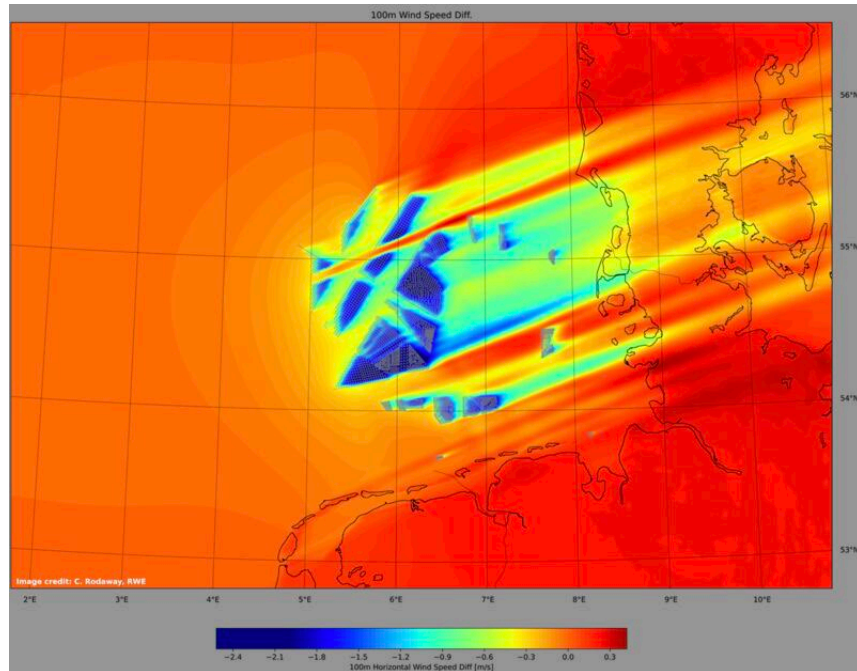
# Supply chain expected to be a big challenge achieving ambitious Offshore build-out targets across EU

Category	Current capacity in EU	Capacity needed to meet 2030 EU targets:
<b>Turbines</b> 	700 units/year 	Up to 1,300 units/year ( <b>*2</b> )
<b>Foundations (bottom fixed)</b> 	Up to 300 units/year 	Up to 1,200 units/year ( <b>*4</b> )
<b>Foundations (floating)</b> 	Up to 10 units/year 	Up to 100 units/year ( <b>*10</b> )
<b>Vessels (installations, cable)</b> 	68 Vessels in operation 	124 Vessels in operation ( <b>*2</b> )

 **Decisive action to counter supply chain bottleneck needed**

# Cluster wake effects will be a challenge for future offshore wind farms especially considering densely covered north sea

## Example: Difference of wind speed at 100 m height



## Comments

- **RWE** applies leading models and methods for **wind energy yield modelling** and is constantly refining them
- Therefore, RWE developed a clear understanding of **long distance “cluster wake effects”** as a challenge for future offshore wind farms
- **Key Findings of RWE model:**
  - Large Offshore clusters create far-reaching wind-shadowing effects (in extreme cases up to 200 km behind the wind farm)
  - Thus, leading to wind yield reduction (in extreme cases of >10%)
  - Relevance for entire industry through potential implications on future offshore development projects in Europe, for example in the German North Sea
- **RWE handed its data over to DNV** (a leading independent provider of wind energy yield studies) **for validation. First results expected soon.**

# Additionally, we as industry need to make decisions today in an environment of several regulatory question marks



**Auction design:** How will the “industry power price ordinance” of §96a Offshore Act (WindSeeG) affect upcoming auctions and what role will qualitative criteria play in the future?



**Power market design:** How will new and updated trading regulations, capacity mechanisms, renewable support schemes or alternative bidding zone configurations affect prices and income?



**Interconnectivity:** What role will hybrid interconnectors and meshed offshore grids play (e.g. SN10 in Germany) and how will they be regulated?

# Going forward, three key areas need to be addressed in order to ensure delivery on the ambitious targets

**1 Long-term stable regulatory framework for investment certainty:** Current market design reforms and spatial planning processes should provide transparency for current and upcoming project bids

**2 Transparent auction designs for efficient site allocation:** two-sided contracts for difference (CfDs) with inflation indexation and a separate PPA route to market for industrial customers. Qualitative auction criteria that support sustainability, deliverability, and European supply.

**3 Decisive action to counter supply chain bottleneck:** Direct and indirect financial support for investments into additional equipment manufacturing capacities and a master plan to secure access to strategic raw materials