



Offshore Wind in Germany – status and outlook Baltic Sea Declaration on Offshore Wind

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German Offshore Wind Energy Foundation

- Founded in 2005 as an independent, non-profit organisation to promote the utilization and research of offshore wind in Germany
- Acquisition of **ownership rights (permit) of alpha ventus** - moderated/accompanied process of Germany's first OWF and test site
- Platform for the **offshore wind/maritime industry**, incl. **trade associations, policy-makers and R/D**
- Involved in various **projects** (EU and national)



Status Quo Germany: 20 Offshore wind farms (OWF) are in operation, 2 more OWF under construction, plus 5 farms have FID's



Status: January, 2018
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CAPACITY OF OFFSHORE WIND TURBINES IN THE GERMAN NORTH AND BALTIC SEAS



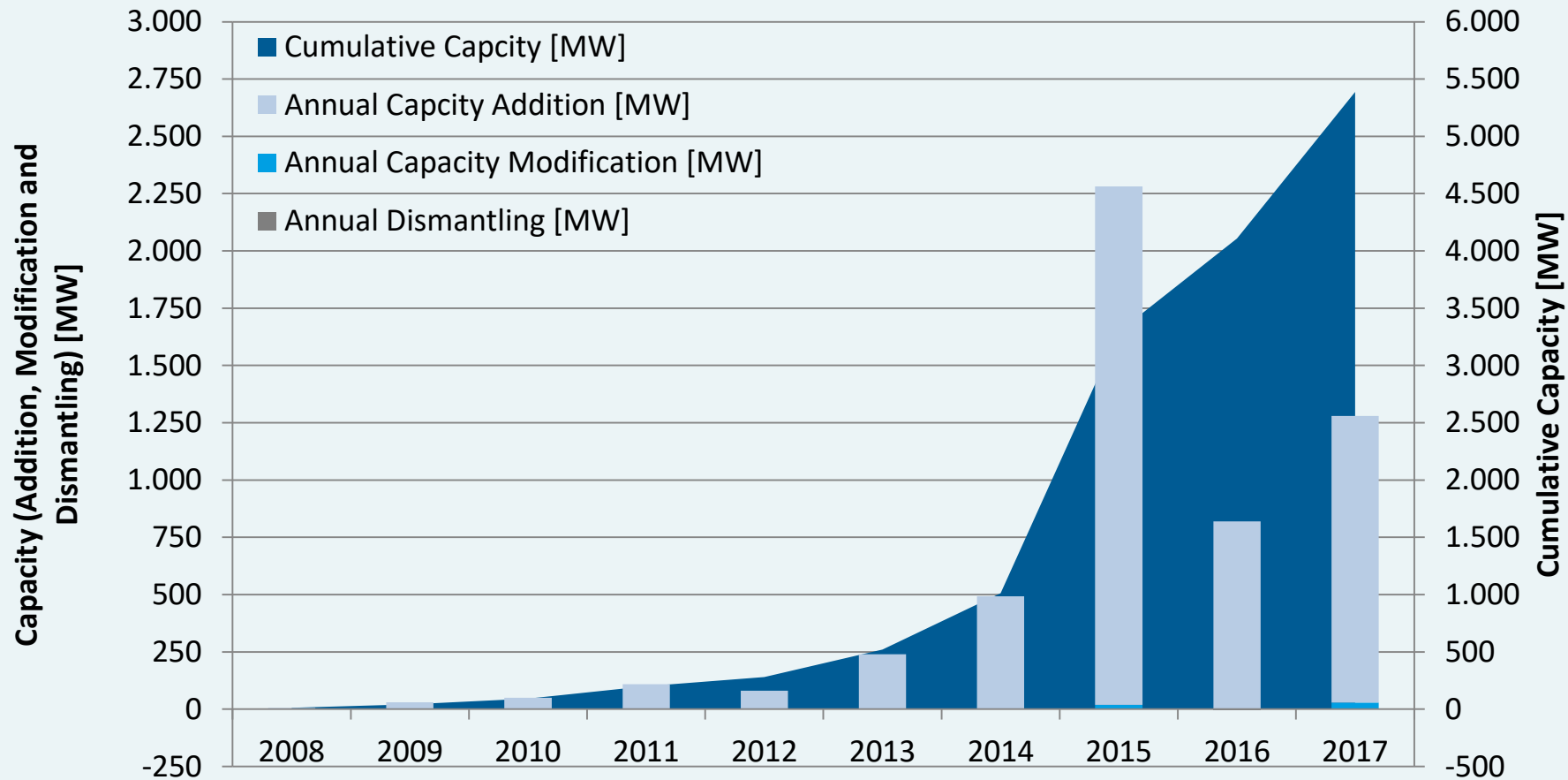


Status Quo Germany:

Almost 1.200 turbines with a capacity of 5.4 GW are feeding in electricity, 126 turbines (780 MW) under construction (as of 31. Dec. 2017)

	Status of the Offshore Wind Energy Development	Capacity [MW]	Number of OWT
Additions Year 2017	OWT (feeding in)	1,250.3	222
	Capacity Modifications of existing OWT	28.8	152
	Installed OWT (no feed-in)	0.0	0
	Foundations w/o OWT		126
Cumulative (2017-12-31)	OWT (feeding in)	5,387.4	1,169
	Installed OWT (no feed-in)	0.0	0
	Foundations w/o OWT		126

Status Quo Germany: Development of Offshore Wind over the last 10 years





Offshore wind power established itself in the energy mix

- In April 2010, the first test site, *alpha ventus*, was fully commissioned and inaugurated (60 MW, 12 turbines)
- By 2018, >1.100 offshore turbines are operational
- During 2017, around 18 TWh of electricity generated – equals total electricity demand of Hamburg and Munich



First Tender results in Germany (April 2017) - a paradigm shift

Project	Owner	Capacity	Award price (€/MWh) – Support on top at the market price	Planned commissioning
He Dreiht	EnBW	900	0	2025
OWP West	DONG	240	0	2024
Borkum Riffgrund West 2	DONG	240	0	2024
Gode Wind 3	DONG	110	60	2024

Second Round Tender results in Germany (April 2018) – cost reduction trend confirmed - average weighted award price of 4,66 ct/kWh

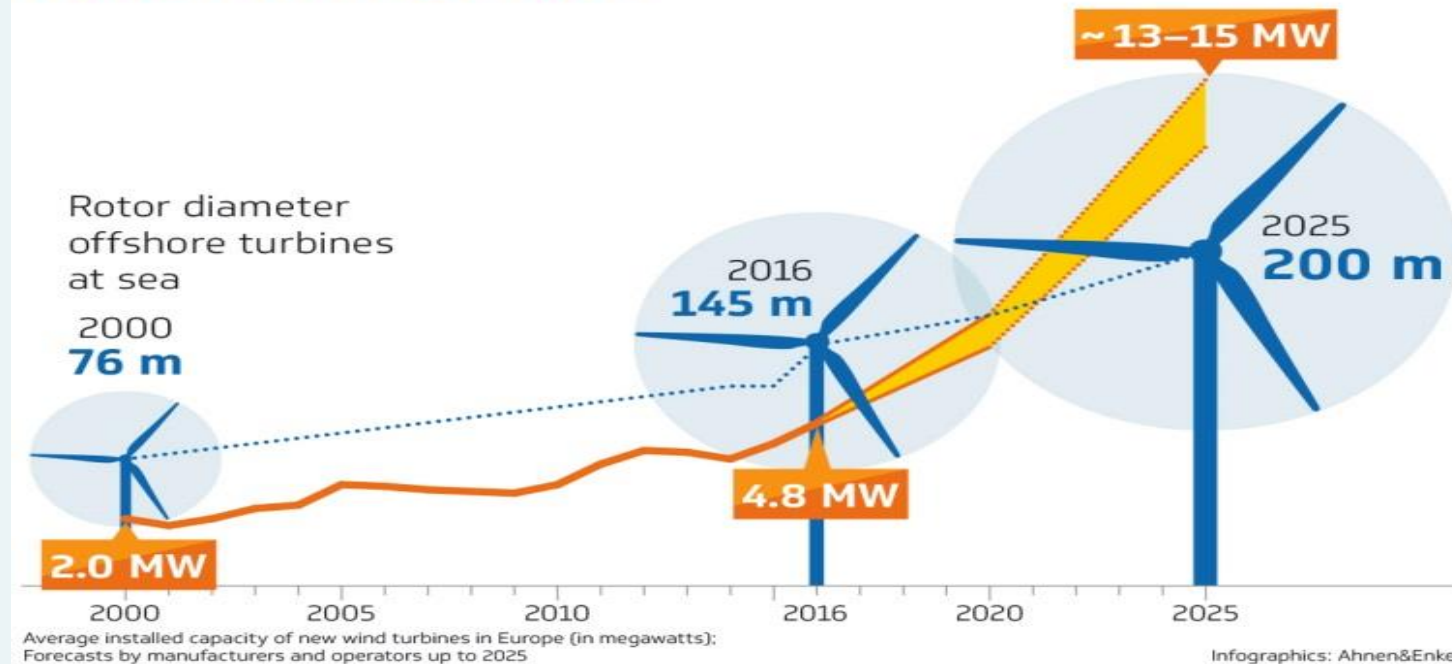
Project	Owner	Capacity (MW)	Award price (Cent/kWh) – Support on top at the market price	Planned commissioning
Baltic Eagle	Iberdrola	476	6,46	N/A
Wikinger Süd	Iberdrola	10	0	N/A
Arcadis Ost 1	Parkwind	N/A	N/A	N/A
Gode Wind 04	Oersted	131,75	9,83	2024/25
Borkum Riffgrund West 1	Oersted	420	0	2024/25
Kaskasi	innogy	325	N/A	2022

Reasons for the dramatic price reductions

Technological developments

- Further progress in offshore technology is expected, which will reduce the average cost of energy
- By 2024/2025 turbines with a capacity of 13-15 MW are expected to be commercially available
- The number of turbines used in an OWF would thereby be reduced, which further reduces costs

A GROWTH IN CAPACITY

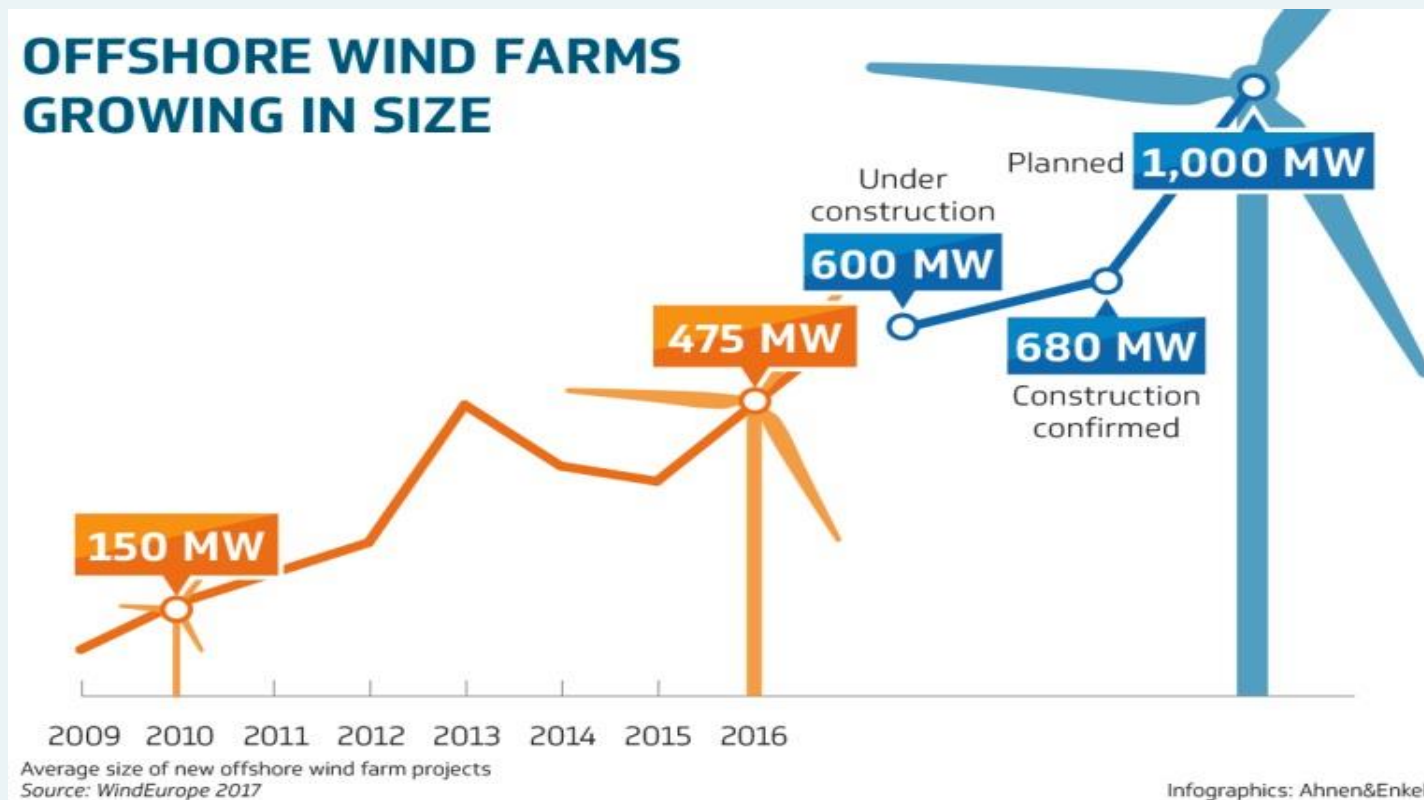




Reasons for the dramatic price reductions

Economies of scale

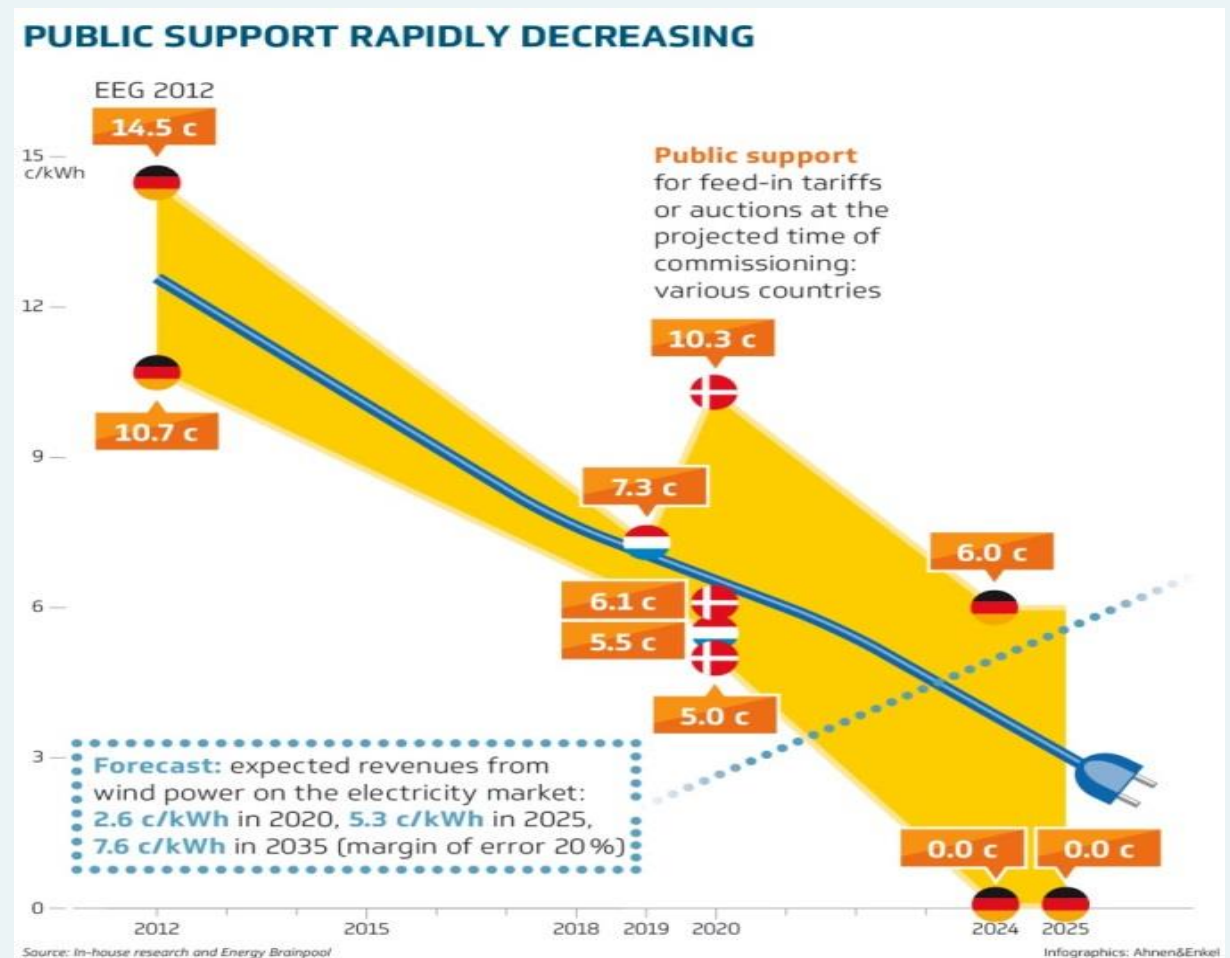
- Wind farms are increasing in size.
Currently under construction:
e.g. 1200 MW farm, Hornsea UK –
cost reductions by using economies of scale
- The combination of individual projects (OWP West, Borkum Riffgrund West 2) in the same cluster area, or close to other OWF (He Dreht and Hohe See) leads to cost-reducing synergy effects



Reasons for the drastic price reductions

Electricity price development assumptions

Experts forecast an electricity market price of 5.3 c/kWh in 2025 and 7.6 c/kWh in the year 2035





Tender results in Germany: Conclusions and Industry Requests

- The dramatic drop in cost/prices reflects, above all, the rapidly lowering costs through industrialization and a steep learning curve in the industry
- **The new federal government is required to increase the expansion targets for offshore wind energy: We are calling for at least 20 GW by 2030 and 30 GW by 2035**
- **As a first step free converter capacity should be used asap,** plus additional grid connections in the Baltic Sea/N. Sea
- Bold measures for grid expansion and the implementation of sector coupling must now be taken quickly to take advantage of the now clear positive prospects of offshore wind energy
- Offshore wind energy has proved to be at the core of a low-cost and sustainable energy transition



Baltic Sea Declaration

Andreas Wagner

Managing Director of Stiftung OFFSHORE-WINDENERGIE
(German Offshore Wind Energy Foundation)



Chair of

BaSOF | **Baltic Sea**
Offshore Wind Forum



Baltic Sea Offshore Forum

The **Baltic Sea Offshore Forum (BaSOF)** is a **platform of industrial stakeholders**, aiming to create a truly joint regional approach to the offshore wind developments in the Baltic Sea.

We believe that developing wind offshore in the Baltic Sea region will create a new industry and facilitate **further economic growth**, based on innovation, in the region .

BaSOF is led by the **national wind energy associations** with a rotating chair:

Danish Wind Industry Association (Chair 2015)

Estonian Wind Power Association (Chair 2017)

Finnish Wind Power Association

German Offshore Wind Energy Foundation (SOW), Chair 2018

Lithuanian Wind Power Association

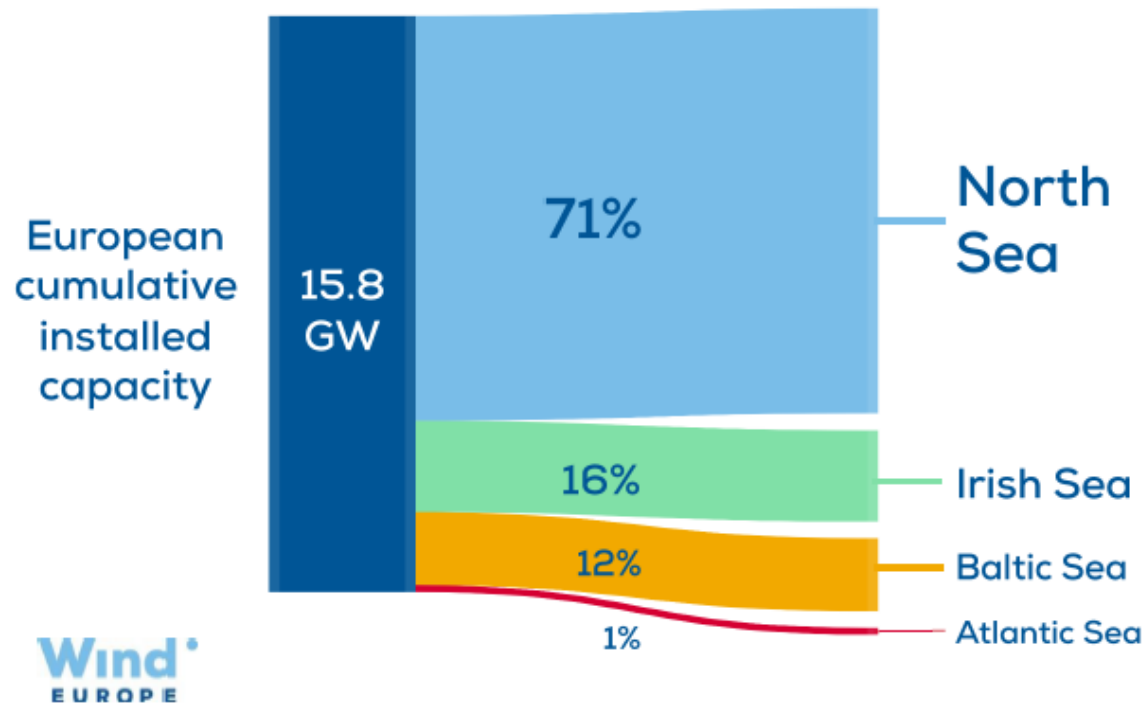
Polish Wind Energy Association (Chair 2016)

Swedish Wind Energy Association (initiator)

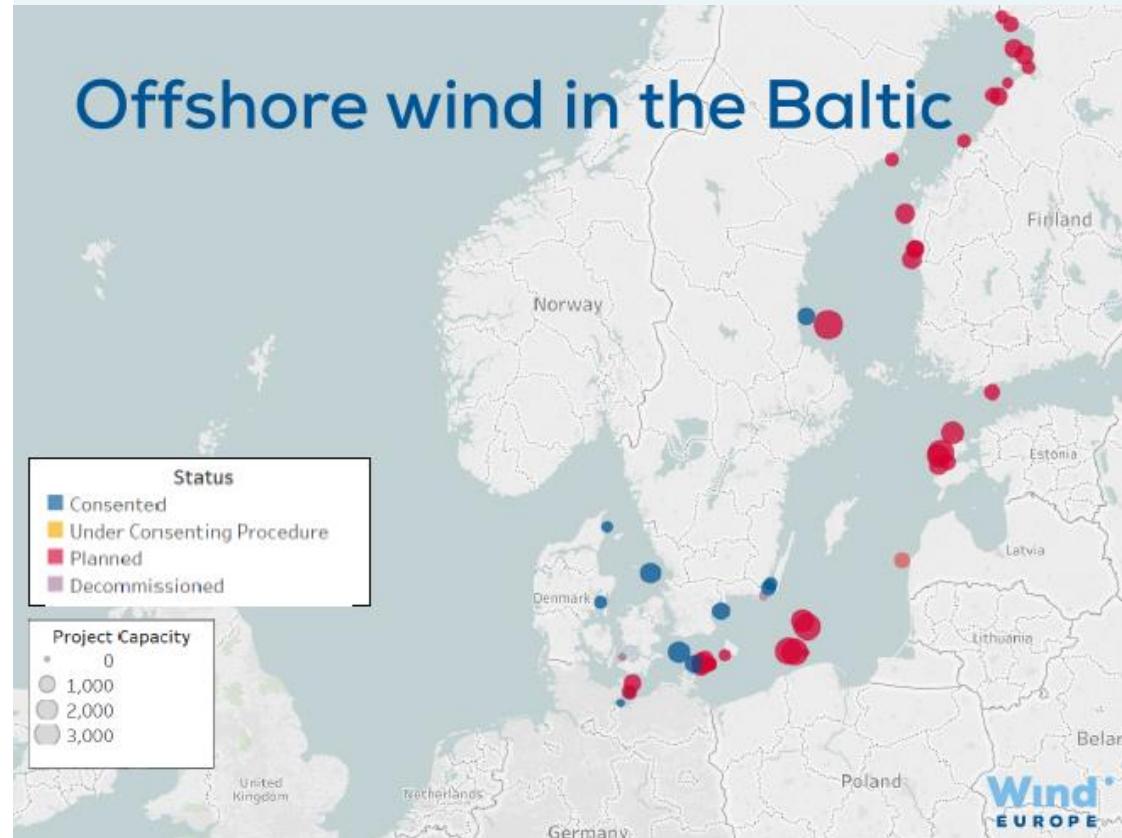


Offshore Wind in the Baltic Sea

Share by Sea Basin Cumulative

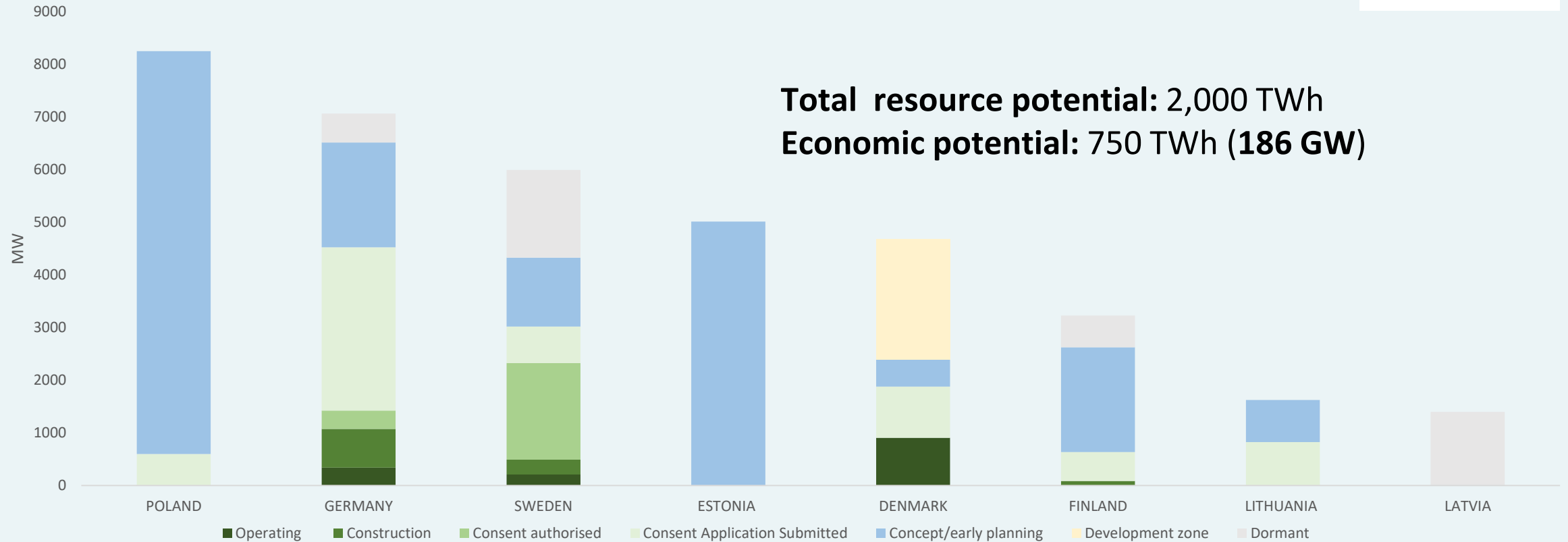


Offshore wind in the Baltic





Baltic Sea offshore wind potential and project pipeline



The overall offshore project pipeline in the Baltic Sea is ca. 30 GW



Baltic Sea Declaration: High wind, low waves – A favourable place for offshore wind power

Key Messages: conditions in the Baltic Sea are ideal for cost-effective exploitation of offshore wind resources.

- Offshore wind energy has a **high potential to benefit the economies** around the Baltic Sea.
- There is **need for stable and transparent framework** conditions for the utilization of offshore wind energy in the Baltic Sea for project developers and supply chain industry.
- **Closer cooperation** in the field of **MSP** in the Baltic Sea, especially with regard to energy production and transmission is necessary.
- **Regional cooperation** will **contribute to further cost reductions** by reducing transaction cost and exploiting benefits of scale.



Need for a political declaration on energy cooperation between the Baltic Sea Countries.

<https://www.offshore-stiftung.de/sites/offshorelink.de/files/Baltic-Sea-Declaration.pdf>



Baltic Sea Declaration

The tasks to achieve the goals are listed in the Annex of the Declaration:

- TASK 1:** Analyse how the natural condition benefits of the Baltic Sea turn into cost benefits of offshore wind power.
- TASK 2:** Map the supply-chain of offshore wind power in the B.S. countries and analyse the socioeconomic value of it.
- TASK 3:** Jointly support the European Commission in creating the legal framework, according to the approach described in the Declaration.
- TASK 4:** Represent clear interest in the grid development plans in the B.S. area and related EU projects.
- TASK 5:** Represent clear interest in joint spatial planning in the Baltic Sea area.
- TASK 6:** Update assessments on the potential of offshore wind power in the B.S. region.

Baltic Sea Declaration

On 28 September 2017, the **Baltic Sea Declaration** was officially signed by the national wind associations around the Baltic Sea in Tallinn, Estonia.



WindEurope and National Wind Energy Associations sign the Baltic Sea Declaration



Wind Europe Support Letter

Baltic Sea Declaration

Supporters (*inter alia*)

Wind Europe: Giles Dickson
handing over support letter to
Estonian Presidency

Claude Turmes, MEP and President of
EUFORES, **signed a support letter** of
the Baltic Sea Declaration to boost the
development of offshore wind power
in the Baltic Sea region.



Claude Turmes Support Letter



Martin Kruus & Claude Turmes



Baltic Sea Declaration

Supporters

- As the declaration sees strong synergies between the development of offshore wind power and grids, it is also support by the whole **Baltic InteGrid project** consortium.
- On behalf of all project partners Baltic InteGrid lead partner IKEM has signed a letter of support.



Letter of Support for the Baltic Sea Declaration

The INTERREG project Baltic InteGrid - represented by lead partner Institut für Klimaschutz, Energie und Mobilität (IKEM) - hereby expresses its interest in the goals of the Baltic Sea Declaration initiated by the Baltic Sea Offshore Forum (BaSOF).

The Baltic InteGrid project consortium acknowledges the goals defined in the Baltic Sea Declaration as relevant and important for the further development of offshore wind energy and cross-border infrastructures in the Baltic Sea region. The project consortium believes that the tasks defined in the Annex I of the Baltic Sea Declaration are realistic step towards the cost-efficient development of a low-carbon and well-integrated energy market in the Baltic Sea region.

The Baltic InteGrid project consortium will follow the implementation of the task defined in the Baltic Sea Declaration and will, to the extent possible, provide input and/or feedback with the knowledge developed in the Baltic InteGrid project.

Sincerely,

Anika Nicolaas Ponder
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Baltic Sea Declaration

Next steps:

- Seeking support from the EU Commission
- Event in Brussels – Parliamentary Breakfast (with WindEurope) - on 3 May 2018
- Approaching National Ministries/Governments for endorsement of the Declaration





Thank you very much for your attention!

German Offshore Wind Energy Foundation

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