

Global Offshore Wind Report

2020



February 2021



WORLD FORUM
OFFSHORE WIND

Top 5 facts about WFO

WFO: 100% Offshore Wind



Non-profit
organisation
founded in 2018



Initiatives
Floating Offshore
Wind Committee



50 + global
member
organisations



Global setup
with offices
in Hamburg
and Singapore



Core activities

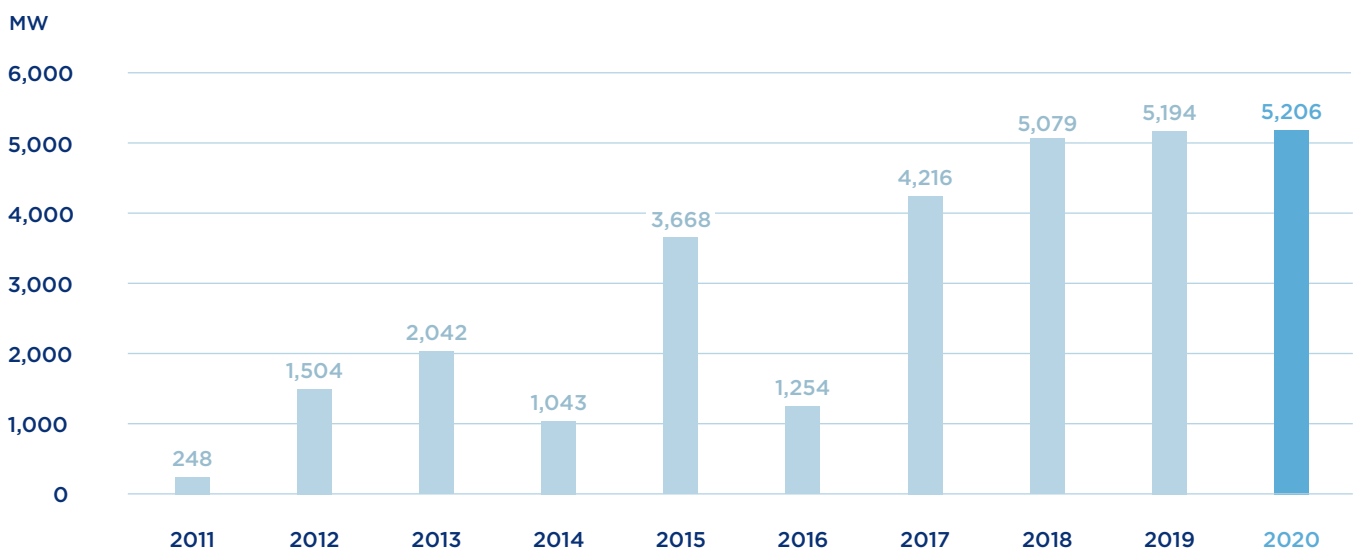
1. Networking & Events
2. Information & Reports
3. NGO & Government Advisory

World Forum Offshore Wind (WFO) is the world's first organisation 100% dedicated to fostering the global growth of offshore wind energy. WFO's international members represent the complete offshore wind value chain including utilities, manufacturers, service firms and non-profit organisations.

2020

Record offshore wind growth despite COVID-19

Annually added global offshore wind capacity



- With more than **5.2 GW** of globally added offshore wind capacity in 2020, the offshore wind industry continues to grow strongly despite COVID-19
- Globally, **15** new offshore wind farms went into operation¹ in the UK, China, Germany, Portugal, Belgium, the Netherlands and the USA
- The average size of a newly added offshore wind farm during the year 2020 was **347 MW** compared to 325 MW in 2019

¹ In operation: all turbines installed and first electricity being generated



5.2 GW

Globally added offshore wind capacity in 2020

In detail

Global offshore wind farms put into operation in 2020

New operational² offshore wind farms in 2020

IN
OPERATION

No	Wind Farm	MW	Units	MW/Unit	Turbine	Location
1	Coastal Virginia Offshore Wind	12	2	6.0	Siemens Gamesa SG 6.0-154	US
2	WindFloat Atlantic (floating)	25	3	8.4	MHI-Vestas V164-8.4	PT
3	Guangdong Yudean Zhanjiang Wailuo	198	36	5.5	Mingyang MYSE5.5-155	CN
4	Trianel Windpark Borkum	203	32	6.3	Senvion 6.2M152	DE
5	Northwester 2	219	23	9.5	MHI-Vestas V164-9.5	BE
6	Fujian Putian City Flat Bay Two (Zone B)	264	44	6.0	Siemens Gamesa SG 6.0-154	CN
7	CGN Pingtan Island	300	61	4.0/5.5	51xSE 4.0-130, 10xMY 5.5MW	CN
8	Dalian Zhuanghe 3 CTGNE	300	72	4.2	Goldwind GW 136-4200	CN
9	Huaneng Guanyun Phase 1	300	48	6.5	GW 171-6.45MW	CN
10	Laoting Bodhi Island	300	75	4.0	Siemens Gamesa SG 4.0-130	CN
11	Yangjiang Nanpeng Island	400	73	5.5	Mingyang MYSE5.5-155	CN
12	SeaMade	487	58	8.4	Siemens Gamesa SG 8.0-167 DD	BE
13	East Anglia One	714	102	7.0	Siemens Gamesa SG 7.0-154 DD	UK
14	Borssele 3&4	732	77	9.5	MHI Vestas V164-9.5	NL
15	Borssele 1&2	752	94	8.0	Siemens Gamesa SG 8.0-167 DD	NL
Total		5,206				

- 15 projects from **Europe**, **Asia** and the **USA** went into operation in 2020
- **WindFloat Atlantic** marks an addition to the global **floating** offshore wind capacity
- In the **Netherlands** the two **large-scale Borssele projects** went into operation

² In operation: all turbines installed and first electricity being generated

15 projects

New operational offshore wind farms in 2020

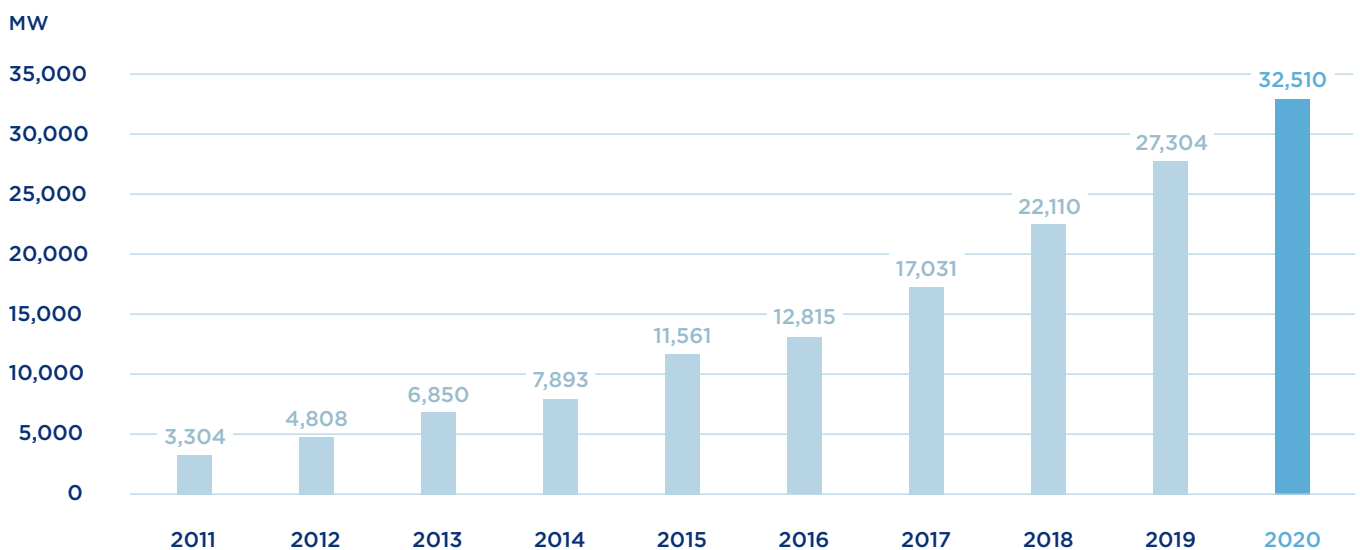


Global growth

Offshore wind capacity surpasses 32 GW

Global offshore wind capacity in operation³ – cumulative

IN
OPERATION



- Globally, installed offshore wind capacity reached **32.5 GW** by the end of the year 2020⁴
- During **HY 2** new offshore wind installations exceeded the first six months with **2,671 MW** (HY 1: 2,535 MW)
- Worldwide **162** offshore wind farms⁵ are currently in operation in Europe, Asia and the USA

³ In operation: all turbines installed and first electricity being generated

⁴ In total, 38.5 MW of offshore wind capacity have already been decommissioned

⁵ Definition: project consisting of at least two offshore wind turbines



32.5 GW

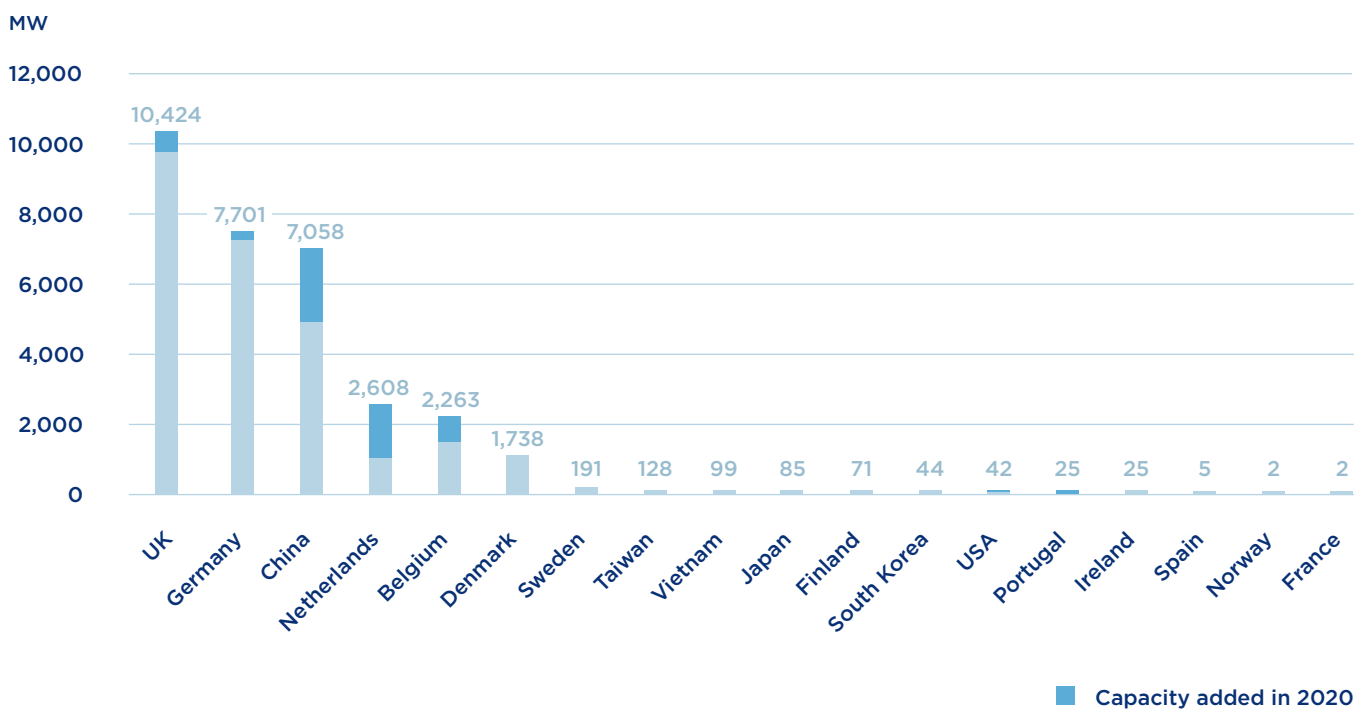
Global offshore wind capacity in operation

Top markets

China poised to overtake Germany as the world's second largest offshore wind market

Global offshore wind capacity in operation⁶ – by country

IN
OPERATION



- **China** continues to grow rapidly with **2.1GW** of newly installed capacity in 2020, of which 700MW were installed during the second half of 2020
- **Germany** narrowly retains its second place with a total of **7.7GW**, but **zero capacity** was added during the second half of 2020
- **The Netherlands** overtook Belgium and Denmark by adding **1.5GW** of offshore wind capacity during the second half of 2020

⁶ In operation: all turbines installed and first electricity being generated



1.5 GW

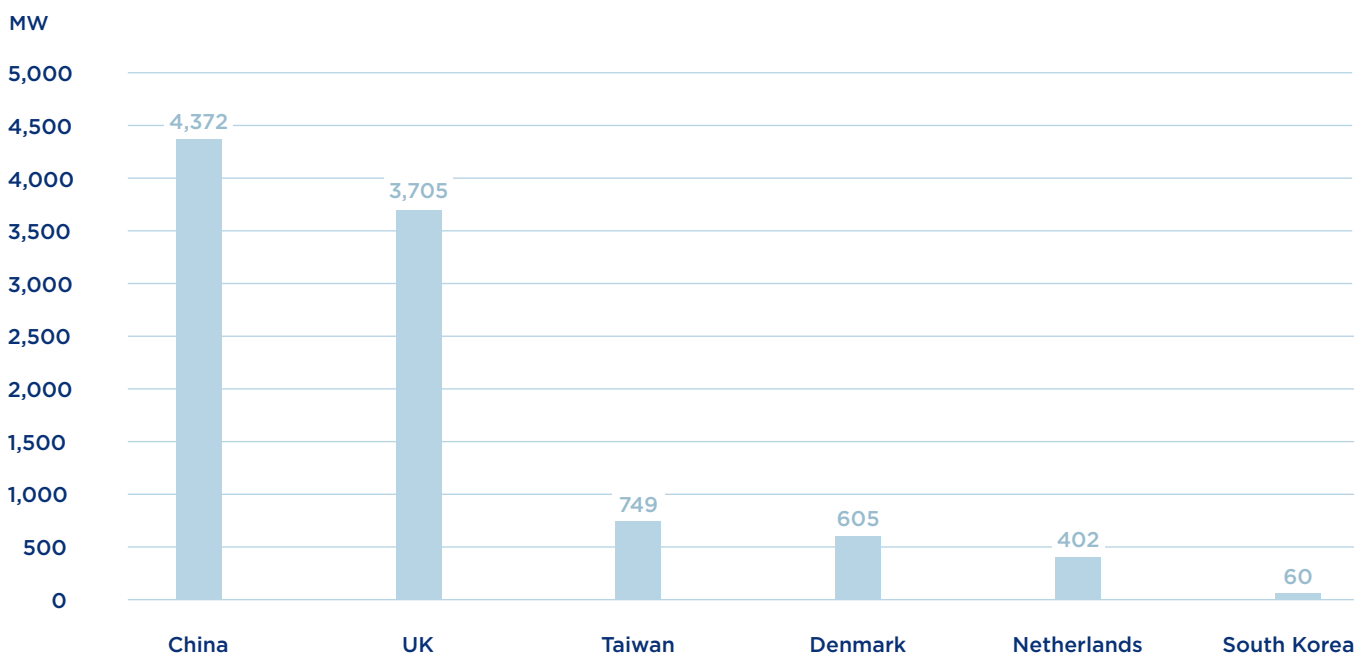
Offshore wind capacity added in the Netherlands

Construction

China and the UK lead global offshore wind construction activities

Global offshore wind capacity under construction⁷ by end of 2020

UNDER
CONSTRUCTION



- **China's** offshore wind sector continues to grow rapidly with a total capacity of **4.4 GW** currently under construction
- In the **UK**, the world's first **1GW+** offshore wind farm started offshore construction (Hornsea 2 with 1.4 GW)
- **Taiwan's** first two large scale offshore wind projects have started construction (Changhua Phase 1, Yunlin)

⁷ Under construction: first offshore wind foundation installed



1.4 GW

Largest offshore wind farm under construction

In detail

Global offshore wind farms under construction

Offshore wind farms under construction⁸ worldwide

UNDER
CONSTRUCTION

No	Wind Farm	MW	Units	MW/Unit	Turbine	Location
1	Borssele 5	19	2	9.5	MHI-Vestas V164-9.5	NL
2	Kincardine - Phase 2 (floating)	48	5	9.5	MHI Vestas V164-9.5	UK
3	Southwest Offshore Demonstration Phase 1	60	20	3.0	7 WinDS 3000/100, 13 WinDS 3000/134	KR
4	Changhua Phase 1	109	21	5.2	Hitachi 5.2 MW	TW
5	Fujian Fuqing Haitan Strait	154	22	7.0	Mingyang MYSE7.0-158	CH
6	Longyuan Putian Nanri Island Phase 1	200	50	4.0	Siemens Gamesa SWT-4.0-130	CH
7	Fujian Putian City Flat Bay (Zone F)	200	29	7.0	Siemens Gamesa SWT 7.0-154	CH
8	Pingtian Changjiangao	204	37	5.5	Mingyang MYSE5.5-155	CH
9	Daishan 4	234	54	4.3	18 SG 4.0-130, 36 EN148-4.5	CH
10	Fuqing Xinghuawan Offshore Wind Phase II	280	35	8.0	Goldwind GW 175-8.0	CH
11	Datang Jiangsu Binhai	300	95	3.2	Mingyang SCD 3MW	CH
12	Zhuhai Jinwan	300	55	5.5	Mingyang MYSE5.5-155	CH
13	Tangshan Area 6 Phase 2	300	75	4.0	Siemens Gamesa SG 4.0-130	CH
14	Sheyang H1	300	67	4.5	Envision EN148-4.5	CH
15	CTGNE Yangjiang Shapa Phase 1	300	55	5.5	Mingyang MYSE5.5-155	CH
16	Yangjiang Nanpengdao	300	55	5.5	Mingyang MYSE5.5-155	CH
17	Windpark Fryslan	383	89	4.3	Siemens Gamesa SWT-4.0-130	NL
18	Jieyang Shenquan	400	73	5.5	Mingyang MYSE5.5-155	CH
19	Three Gorges Renewables YangXi II	400	73	5.5	Mingyang MYSE5.5-155	CH
20	Neart na Gaoithe	450	54	8.4	Siemens Gamesa SG 8.0-167 DD	UK
21	Shanwei Houhu Offshore Wind Phase I	500	91	5.5	Mingyang MYSE5.5-155	CH
22	Kriegers Flak	605	72	8.0	Siemens Gamesa SG 8.0-167 DD	DK
23	Yunlin	640	80	8.0	Siemens Gamesa SG 8.0-167 DD	TW
24	Triton Knoll	857	90	9.5	MHI-Vestas V164-9.5	UK
25	Moray East	950	100	9.5	MHI-Vestas V164-9.5	UK
26	Hornsea 2	1,400	165	8.4	Siemens Gamesa SG 8.0-167 DD	UK
Total		9,893				

- Nearly **10GW** of offshore wind capacity is under construction **worldwide** by the end of 2020
- **44%** of the global offshore wind capacity is currently being installed in **China**
- The **average size** of offshore wind projects under construction worldwide is **381MW**

⁸ Under construction: first offshore wind foundation installed

**JOIN
US!**

World Forum Offshore Wind e.V.

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