

# 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**

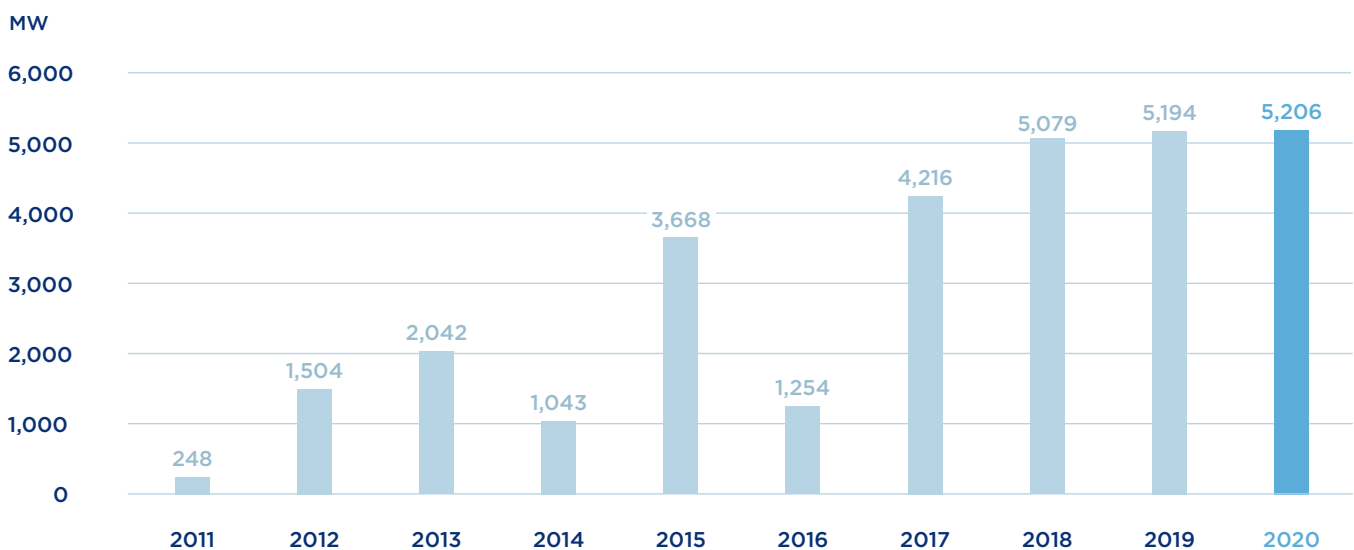
1. Networking & Events
2. Information & Reports
3. NGO & Government Advisory

**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 operation<sup>1</sup> 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

<sup>1</sup> 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 operational<sup>2</sup> 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

<sup>2</sup> In operation: all turbines installed and first electricity being generated

# 15 projects

New operational offshore wind farms in 2020

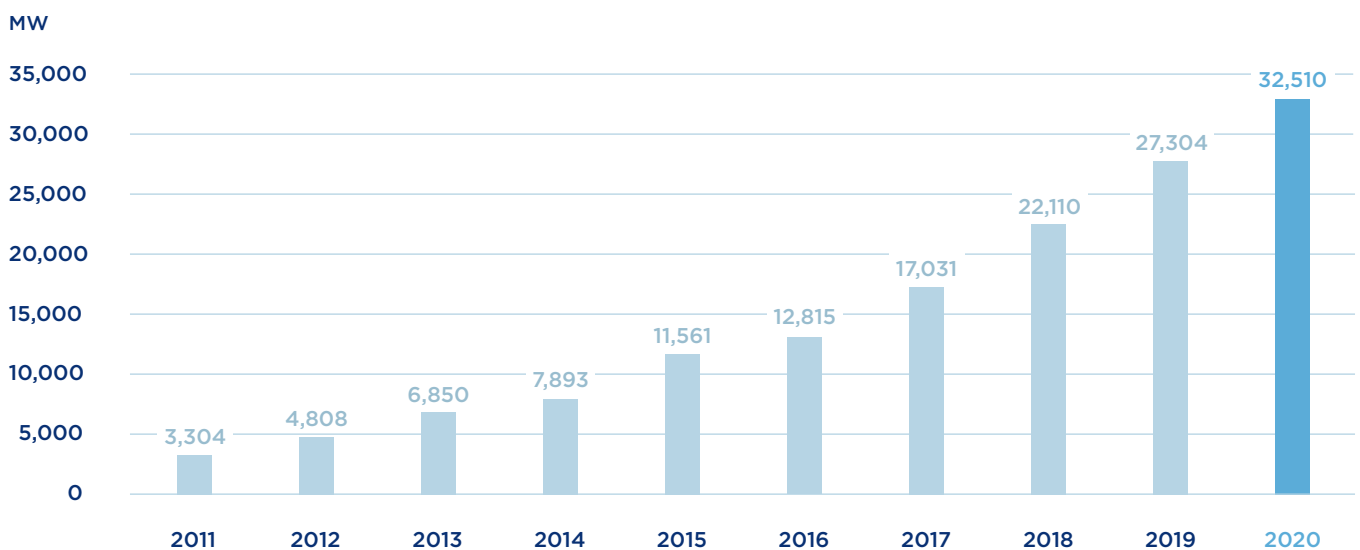


# Global growth

## Offshore wind capacity surpasses 32 GW

### Global offshore wind capacity in operation<sup>3</sup> – cumulative

IN  
OPERATION



- Globally, installed offshore wind capacity reached **32.5 GW** by the end of the year 2020<sup>4</sup>
- 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 farms<sup>5</sup> are currently in operation in Europe, Asia and the USA

<sup>3</sup> In operation: all turbines installed and first electricity being generated

<sup>4</sup> In total, 38.5 MW of offshore wind capacity have already been decommissioned

<sup>5</sup> Definition: project consisting of at least two offshore wind turbines



# 32.5 GW

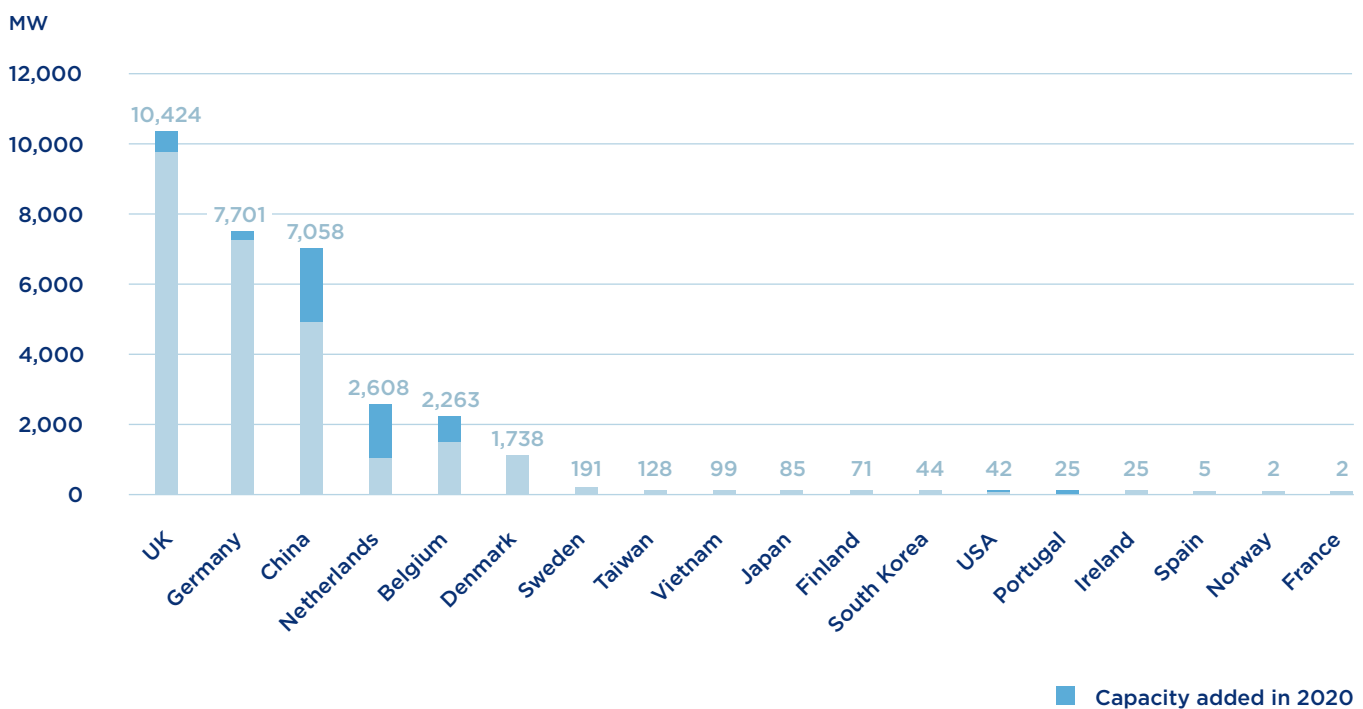
Global offshore wind capacity in operation

## Top markets

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

Global offshore wind capacity in operation<sup>6</sup> – 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

<sup>6</sup> In operation: all turbines installed and first electricity being generated



# 1.5 GW

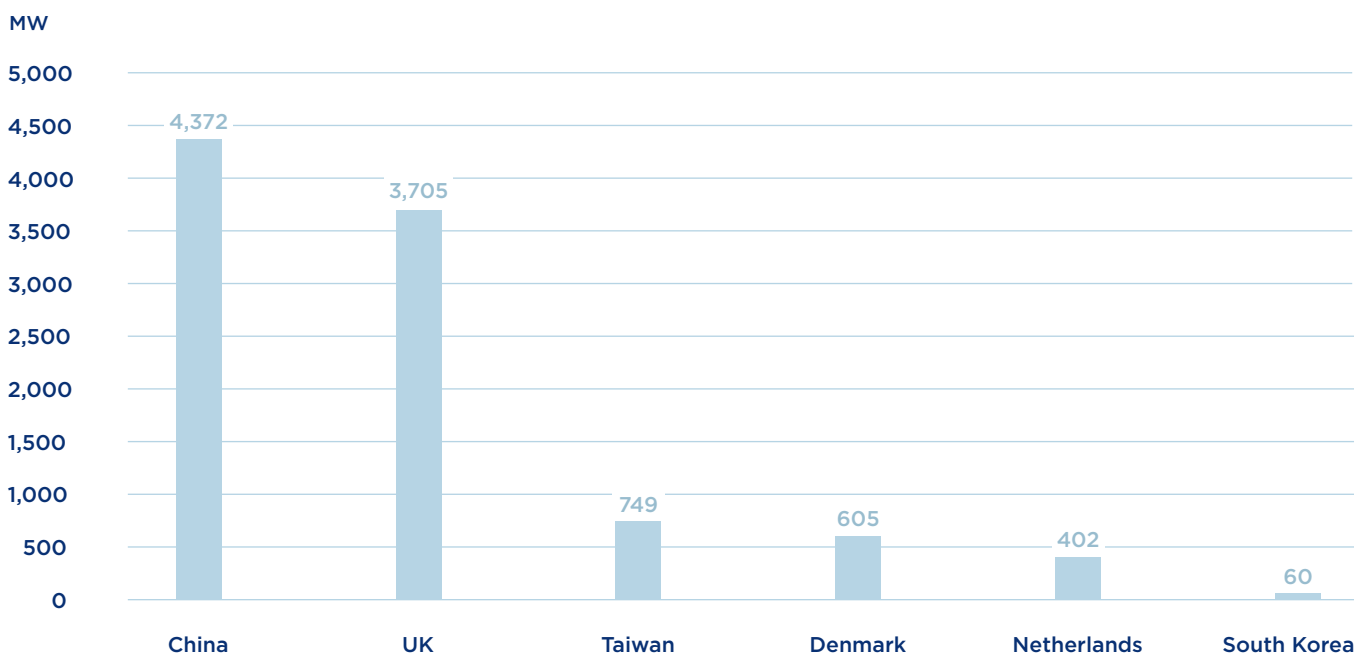
Offshore wind capacity added in the Netherlands

## Construction

### China and the UK lead global offshore wind construction activities

Global offshore wind capacity under construction<sup>7</sup> 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)

<sup>7</sup> 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 construction<sup>8</sup> 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
<b>Total</b>		<b>9,893</b>				

- 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**

<sup>8</sup> Under construction: first offshore wind foundation installed

**JOIN  
US!**

**World Forum Offshore Wind e.V.**

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