

# Global Offshore Wind Report

## 2019



February 2020



WORLD FORUM  
OFFSHORE WIND

# Top 5 facts about WFO

## WFO: 100% Offshore Wind



**Non-profit**  
organisation  
founded in 2018



**Focus**  
100%  
offshore wind



**20 global**  
member  
organisations



**Global setup**  
offices in Hamburg  
and Singapore



**Core activities**

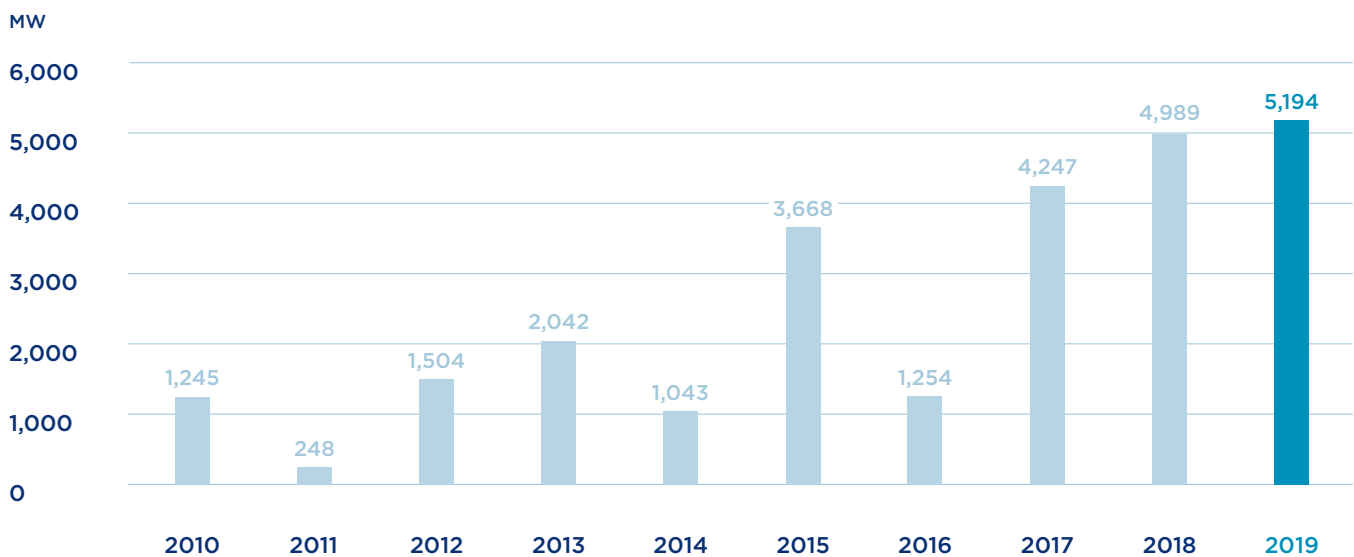
1. Networking & Events
2. Information & Reports
3. NGO & Government Advisory

**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 other non-profit organisations.

# 2019

## Record year for offshore wind

### Annually added global offshore wind capacity



- With **5.2GW** of globally added offshore wind capacity 2019 marks a new record year
- Globally **16** new offshore wind farms went into operation<sup>1</sup> in China, UK, Germany, Denmark, Belgium and Taiwan
- The average size of a newly added offshore wind farm was **325 MW** and this number is expected to grow significantly

<sup>1</sup>In operation: all turbines of wind farm installed and first electricity being generated



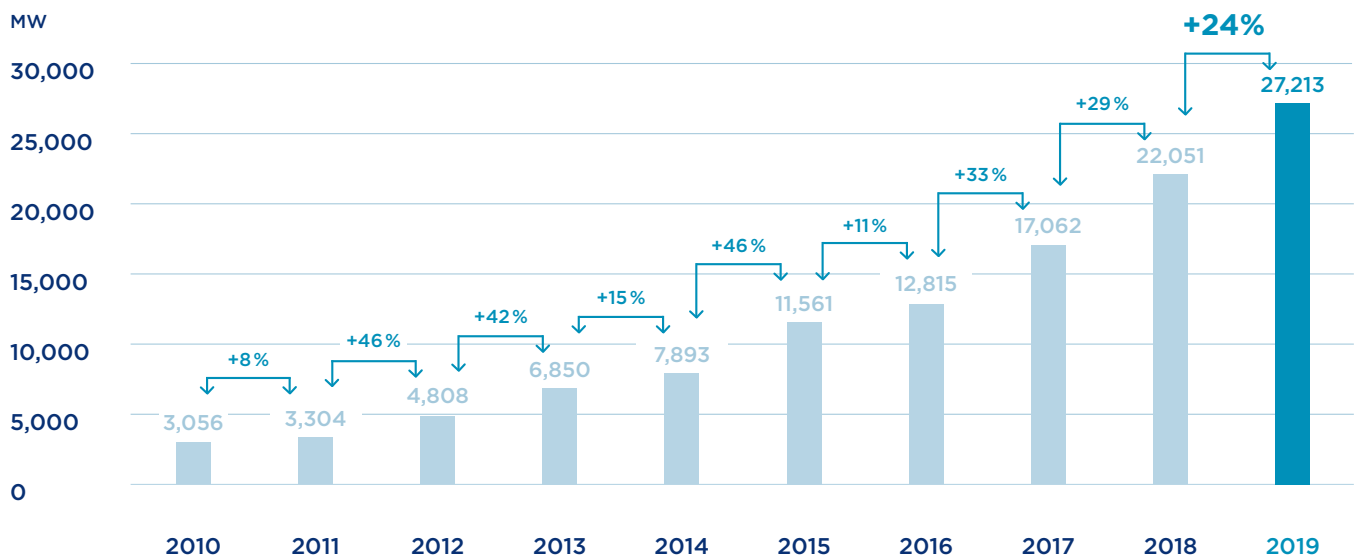
# 5.2 GW

Record: 2019 added offshore wind capacity

# Dynamic growth

## Rapid expansion of the globally installed offshore wind capacity

### Global offshore wind capacity in operation<sup>2</sup> – cumulative



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

- Globally installed offshore wind capacity has reached **27.2 GW** by the end of 2019
- **24% growth** of global offshore wind installations compared to 2018
- Worldwide **146** offshore wind farms<sup>3</sup> are now in operation

<sup>3</sup> Definition: project consisting of at least two offshore wind turbines



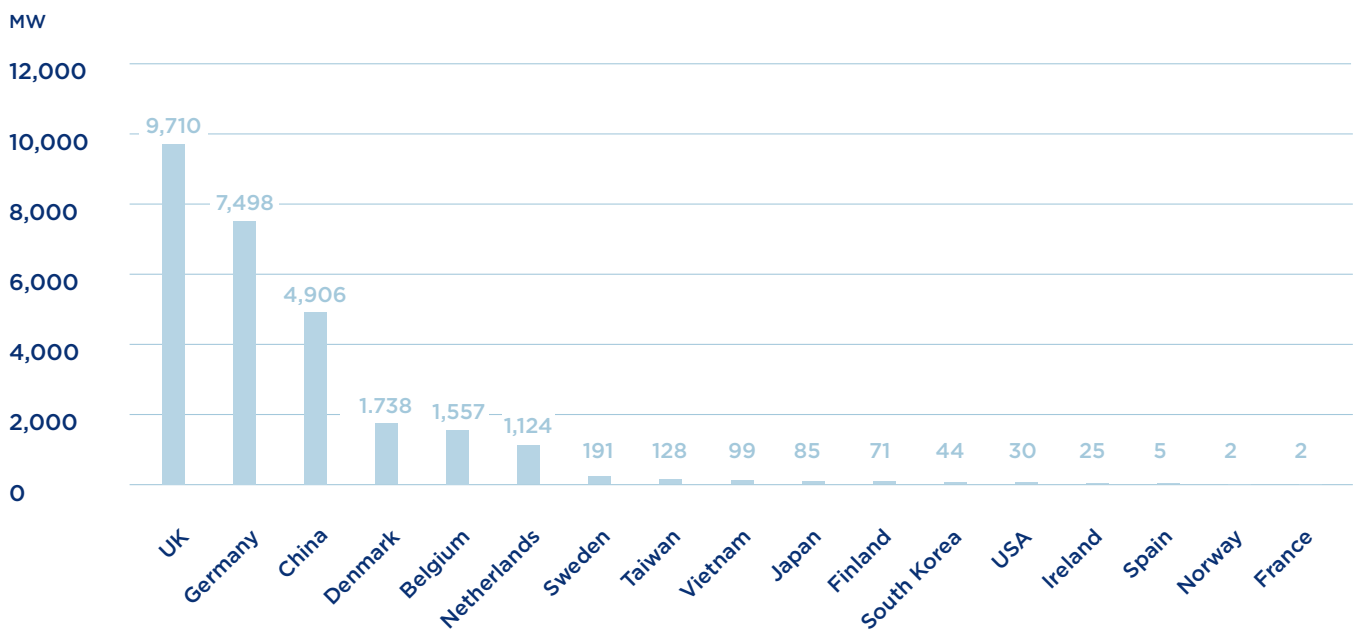
# +24%

Global offshore wind growth rate in 2019

## Top 3

# UK remains offshore wind market leader followed by Germany and China

### Global offshore wind capacity in operation<sup>4</sup> - by country



<sup>4</sup> In operation: all turbines of wind farm installed and first electricity being generated

- The **UK** remains the world's biggest offshore wind market with **9.7 GW** of installed capacity
- **Germany** retains its second place with a total of **7.5 GW** of installed offshore wind capacity
- **China** is rapidly catching up with currently **4.9 GW** of operational offshore wind farms



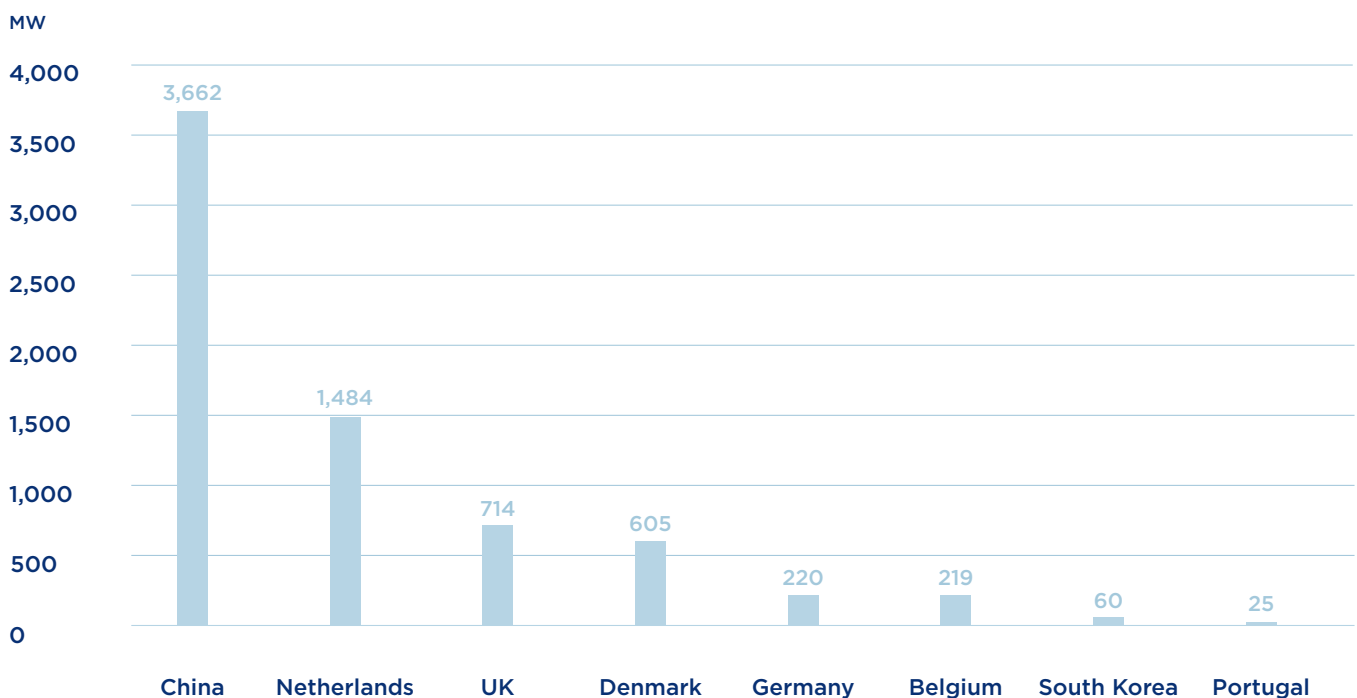
# 9.7 GW

Installed UK offshore wind capacity

# Construction

## China leads the way

### Global offshore wind capacity under construction<sup>5</sup> in 2019



<sup>5</sup>Under construction: first offshore wind foundation installed

- **China's** offshore wind sector is growing rapidly with a total capacity of **3.7 GW** currently under construction. China is expected to become the world's largest offshore wind market during the 2020s
- The continuous offshore wind growth path implemented by the Dutch government makes **The Netherlands** the second largest market for offshore wind projects under construction with **1.5 GW**
- The disruption in the German offshore wind market caused by regulatory framework changes is reflected in the low capacity currently under construction of only **220 MW**

# 3.7 GW

Chinese offshore wind capacity under construction

# In detail

## Global offshore wind farms under construction

Wind Farm	MW	Units	MW/unit	Turbine	Location
1 Deutsche Bucht – Extension 1	17	2	8.4	MHI-Vestas V164-8.4	DE
2 Windfloat Atlantic (Floating)	25	3	8.4	MHI-Vestas V164-8.4	PT
3 Southwest Offshore Demonstration Phase 1	60	20	3.0	7 WinDS 3000/100 13 WinDS 3000/134	KR
4 Guangdong Yudean Zhanjiang Wailuo	198	36	5.5	Mingyang MYSE5.5-155	CH
5 Longyuan Putian Nanri Island Phase 1	200	50	4.0	Siemens Gamesa SWT-4.0-130	CH
6 Fujian Putian City Flat Bay (Zone F)	200	29	7.0	Siemens Gamesa SWT 7.0-154	CH
7 Trianel Windpark Borkum 2	203	32	6.2	Senvion 6.2M152	DE
8 Northwester 2	219	23	9.5	MHI Vestas V164-9.5MW	BE
9 Fujian Putian City Flat Bay Two (Zones B)	264	44	6.0	Siemens Gamesa SG 6.0-154	CH
10 Dalian Zhuanghe 3 CTGNE	300	72	4.2	GW 136-4200	CH
11 Datang Jiangsu Binhai	300	95	3.2	MingYang SCD 3MW	CH
12 CGN Pingtan Island	300	61	4.9	51xSE 4.0-130, 10xMY 5.5MW	CH
13 Laoting Bodhi Island	300	75	4.0	Siemens Gamesa SG 4.0-130	CH
14 Tangshan Area 6 Phase 2	300	75	4.0	Siemens Gamesa SG 4.0-130	CH
15 Sheyang H1	300	67	4.5	-	CH
16 Huaneng Guanyun Phase 1	300	48	6.5	GW 171-6.45MW	CH
17 CTGNE Yangjiang Shapa Phase 1	300	55	5.5	Mingyang MYSE5.5-155	CH
18 Borssele 1	376	47	8.0	Siemens Gamesa SG 8.0-167 DD	NL
19 Borssele 2	376	47	8.0	Siemens Gamesa SG 8.0-167 DD	NL
20 CGN Yangjiang Nanpeng Island	400	73	5.5	Mingyang MYSE5.5-155	CH
21 Kriegers Flak	605	72	8.0	Siemens Gamesa SG 8.0-167 DD	DK
22 East Anglia One	714	102	7.0	Siemens Gamesa SG 7.0-154 DD	UK
23 Borssele 3 & 4	732	77	9.5	MHI Vestas V164-9.5MW	NL
<b>Sum</b>	<b>6,989</b>				

- Nearly **7GW** of offshore wind capacity under construction worldwide in eight different countries in Europe and Asia
- More than half of all 23 offshore wind farms currently under construction are located **in China** (13)
- UK, Germany and Denmark** only have a **combined** offshore wind capacity of around **1.5 GW under construction**

## In detail

# Commercial-scale<sup>6</sup> floating offshore wind farms worldwide

Name	MW	Location	Turbine	Status	Commissioning
1 Hywind Scotland	30	UK	Siemens Gamesa SG 8.0-167	Operation	2017
2 Windfloat Atlantic	25	PT	MHI Vestas V164-8.4 MW	Construction	2020
3 Kincardine	50	UK	MHI Vestas V164-9.5 MW	Construction	2020
4 Provence Grand Large	24	FR	SiemensGamesa SG 8.0-167	Development	2021
5 EolMed	24.8	FR	Senvion 6.2 MW	Development	2021
6 Groix-Belle-Ile	28.5	FR	MHI Vestas V164-9.5 MW	Development	2022
7 EFGL	30	FR	MHI Vestas V164-10.0 MW	Development	2022
8 Hywind Tampen	88	NO	SiemensGamesa SG 8.0-167	Development	2022
9 Donghae 1	200	KR	-	Development	2024+
10 Ulsan Metropolitan City	500	KR	-	Development	2025+
<b>Sum</b>	<b>1,000.3</b>				

<sup>6</sup>Excluding demonstration projects of less than 10 MW

- Announcements for two large-scale projects in South Korea brought the total floating offshore wind development pipeline to around **1 GW**
- With four floating offshore wind projects under development in the Atlantic Ocean as well as Mediterranean Sea **France** is the front runner in this new market
- While the last decade was the demonstration phase, the **2020s** will most likely bring the **commercial breakthrough** for floating offshore wind



# 1 GW

Floating offshore wind development pipeline





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