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NewEnergyUpdate

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Offshore Wind Opportunities in Europe and Beyond

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In light of the recent flurry of activity in the European offshore wind market over the past few years. It is quite apparent the market has reached a new level of maturity. Indeed, we even saw the first successful zero bids at the end of 2017.

Europe's maturity has been evidence of the progress made by offshore wind. Leaving many asking what steps need to be taken to the hit the estimated 230 GWs needed to meet the Paris targets on decarbonisation of the energy system?

Well the answer is simple; more offshore wind farms need to be put into the water. Where these projects will be developed is still undetermined but it seems likely the UK, German and Dutch markets will continue to be the focal points of development in Europe.

However, the success of these markets has paved the way for new frontiers to open up in Europe. Countries such as Poland and Ireland are gearing up to adopt offshore wind as prices have been driven down to a competitive level.

Offshore wind is not only being embraced by European players, but increasingly other nations are opening their shores for business. Indicating we are witnessing the beginning of a global energy trend.

Amongst the ambiguity of which shores offshore wind will expand to, this white paper aims to cover the latest development opportunities in Europe and beyond.

Major contributors to our Offshore Wind Europe 2018 program are experienced Offshore Wind Project Owners, Developers, Operators, EPCs, Specialist Contractors and other R&D thought leaders.

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Introduction

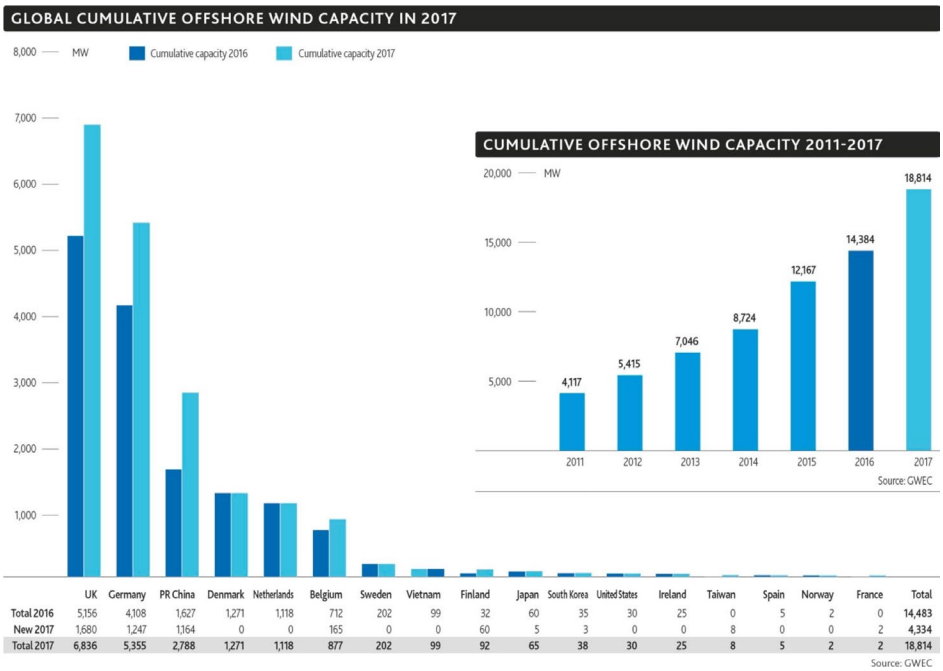
Offshore wind is one of the fastest-growing sources of renewable energy the world has ever seen. The first-ever wind farm was built in 1991[1], and at the end of last year the industry boasted 18.8 gigawatts of installed capacity around the world.[2] Of all this capacity, though, 92% is spread across just five markets. Among these, the top three, UK, Germany and China, made up 80% of all the capacity worldwide at the end of 2017.[3] Only 17 countries in the world had installed offshore wind by then.

The fact that almost 130 other nations have a coastline indicates just how much room there is for expansion in the industry. This is the vista opening up to Europe's offshore wind giants in the run up to New Energy Update's Offshore Wind Europe 2018 conference on November 27 and 28 in London, UK. As a prelude to the event, this paper looks in detail at offshore wind's global opportunities.

Offshore wind's evolution so far

As noted above, the development of offshore wind to date has been dominated by just a handful of markets. Denmark's DONG Energy (now renamed Ørsted) was the industry's first pioneer[4] and Denmark remained Europe's leading offshore wind market for most of the 1990s, until it was overtaken by the Netherlands in 1996.

Offshore wind really only started to pick up from 2000 onwards, when the UK entered the fray and Danish projects breached the 100 MW mark.



	UK	Germany	PR China	Denmark	Netherlands	Belgium	Sweden	Vietnam	Finland	Japan	South Korea	United States	Ireland	Taiwan	Spain	Norway	France	Total
Total 2016	5,156	4,108	1,627	1,271	1,118	712	202	99	32	60	35	30	25	0	5	2	0	14,483
New 2017	1,680	1,247	1,164	0	0	165	0	0	60	5	3	0	0	8	0	0	2	4,334
Total 2017	6,836	5,355	2,788	1,271	1,118	877	202	99	92	65	38	30	25	8	5	2	2	18,814

Source: GWEC

Global cumulative offshore wind capacity in 2017. Source: GWEC.

Since then, the UK has continued to pursue an aggressive buildout rate and, more recently, Germany has overtaken Denmark. These three markets, along with the Netherlands, are the most mature and sophisticated in the world.

Growth potential in mature markets

This maturity does not mean there cannot be further growth, however. The European wind industry body WindEurope predicts that between now and 2030 the UK could add between around 11 GW and 23 GW more of offshore wind, with about 15.7 GW being the most likely guess.

Germany, meanwhile, could see an extra 9 GW to 13 GW of capacity additions up until 2030. The Netherlands might account for another 3.4 GW to 17.4 GW of capacity. WindEurope believes these three markets will account for the bulk of future offshore wind growth in Europe, set to add a combined 35.7 GW of capacity under the association's central 2030 forecast.

Offshore wind power cumulative capacity to 2030

	LOW	CENTRAL	HIGH
United Kingdom	18,000	22,500	30,000
Germany	14,000	15,000	20,000
Netherlands	4,500	11,500	18,500
France	4,300	7,000	11,100
Denmark	3,400	4,300	6,130
Belgium	1,600	4,000	4,000
Poland	2,200	3,200	6,000
Ireland	1,200	1,800	2,000
Estonia	-	600	1,200
Sweden	300	300	800
Portugal	-	150	175
Italy	-	-	650
TOTAL	**49,500**	**70,200**	**98,930**

European offshore wind cumulative capacity to 2030. Source: WindEurope.

The Danish offshore wind market will also continue to grow, albeit constrained by the smaller power demand of the country. WindEurope's central scenario sees Denmark increasing its capacity by around 3 GW over today's level. This continued growth in mature markets is good news for the two original equipment manufacturers (OEMs) that dominated the offshore market in 2017.

Siemens Gamesa Renewable Energy, which MAKE Consulting says had 43% of the market in 2017, and MHI Vestas, which had a further 19%,[5] are both European vendors that will doubtless continue to benefit from these pipelines.

New European markets

Alongside these established markets, though, "there is growth projected in Poland and Ireland and especially in France," says Andrew Canning, press and communications manager at WindEurope. "We also see the emergence of the likes of Sweden and Estonia on the offshore map."

The emergence of many of these markets is driven by factors including a growing awareness of the maturity of offshore wind technology, decreasing opportunities for onshore project development and continuing pressure to decarbonise the grid. In Ireland, for example, Stephen Wheeler, managing director at SSE Ireland, earlier this year told a Committee on Communications, Climate Action and Environment that offshore wind could play a key role in helping the country meet its energy targets for 2020.

"Onshore technologies have served us extremely well to date, but we must be realistic that social acceptance to onshore energy developments is challenging, and greater grid and planning constraints are now in place," he says. "Offshore wind energy can deliver large volumes of renewable electricity in the short term and also set us on the right trajectory for more ambitious 2030 targets."

Other markets worldwide

Outside of Europe, the undisputedly leading market for offshore wind is China. By 2020, the country aims to have 5 GW of capacity connected to the grid, plus another 10 GW under construction.[6] However, the Chinese market largely remains a closed book for foreign OEMs. MAKE figures show the market is dominated by a single Chinese player, SEwind, which devoted 53% of its annual capacity to offshore wind in 2017.[7]

It's a different story in Taiwan, though. The nation allocated 3.8 GW of capacity in May, beating analyst expectations, and is relying on European vendors because of trade embargos with China and a lack of home-grown OEMs. As a result, in the May allocation was dominated by "leading offshore vendors like Ørsted, CIP [Copenhagen Infrastructure Partners], and some Taiwanese companies teaming up with them," says Robert Liew, MAKE's senior analyst for Asia Pacific.

This is also the case with the US, which after a long gestation is now finally seeing significant levels of bid activity. Eastern states currently tendering offshore contracts are keen to develop local manufacturing capacity. But in the early stages, at least, "I really don't see any difference in the turbine manufacturers in the US versus Europe," says Chris Wissemann, managing director of Chicago-based New Power Ventures.

Outlook and conclusions

Compared to onshore wind, where major European markets such as Germany and the UK are seeing faltering government support, the outlook for offshore remains rosy. European OEMs and supply chain players look set to enjoy continued strong growth in major markets, along with growing demand from newer markets such as France and Poland.

In addition to this, OEMs and suppliers can also expect to see an increasing number of calls from emerging markets on other continents. For the near future this demand will likely be focused around Southeast Asia and the US East Coast, with Taiwan representing the most immediate growth opportunity.

In time, European vendors could also play a role in the development of offshore wind in nations such as Japan or South Korea, although these markets could prove tough to crack owing to the presence of established industrial concerns. And this is before floating foundations open up almost any shoreline to offshore wind development.

References

1. Anmar Frangoul, CNBC, 8 September 2017: The world's first ever offshore wind farm has been dismantled, and its parts recycled. Available at https://www.cnbc.com/2017/09/08/the-worlds-first-ever-offshore-wind-farm-has-been-dismantled-and-its-parts-recycled.html.

2. Global Wind Energy Council (GWEC): Global statistics. Available at http://gwec.net/global-figures/graphs/.

3. Ibid.

4. Wikipedia, 8 January 2018: Vindeby Offshore Wind Farm. Available at https://en.wikipedia.org/wiki/Vindeby_Offshore_Wind_Farm.

5. Luke Lewandowski, Make Consulting research note, 13 April 2018: Global Wind Turbine OEM 2017 Market Share.

6. Jason Deign, Greentech Media, 24 July 2017: The Top 5 Emerging Markets for Offshore Wind. Available at https://www.greentechmedia.com/articles/read/the-top-5-emerging-markets-for-offshore-wind#gs.qMviunY.

7. Lewandowski, 2018.

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