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At full sail

Offshore wind vessel outlook

Offshore wind vessels are set to become a major segment within the global fleet

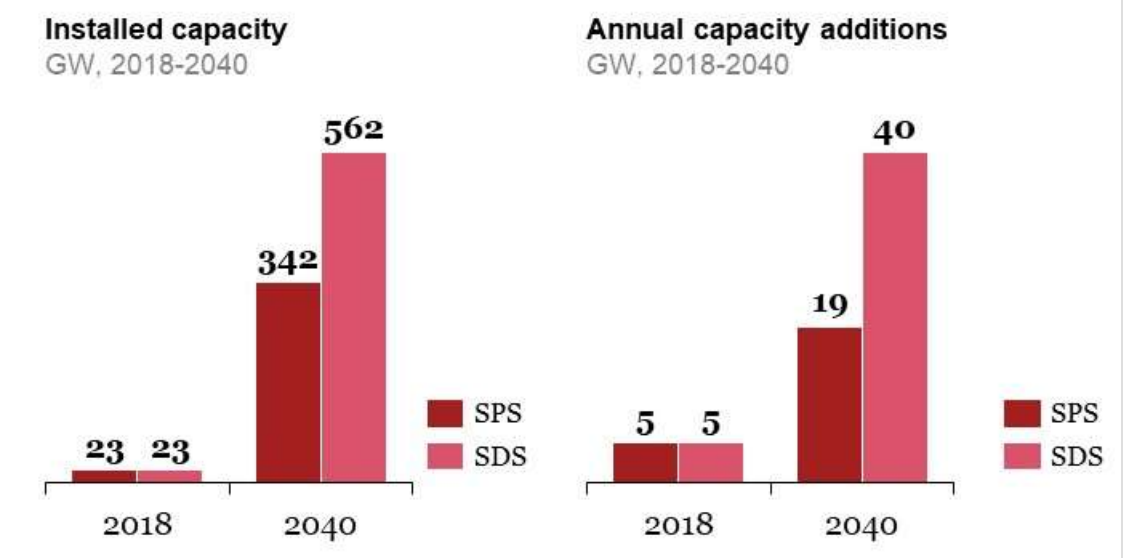
Although there is huge diversity within the global commercial shipping fleet, attention is mostly focused on a handful of vessel types such as bulkers, tankers, and container ships. While these are currently the dominant categories of vessels, changing global demand and resource requirements mean that the fleet composition 20 years from now may look very different. After all, we only have to go back to the early 1990s to find container ships as a small percentage of the total fleet. This is the first in a series of papers which will look at some high growth niches which may become important shipping sectors in the years to come.

One of the most promising growth areas is vessels involved in the development of offshore wind farms. This encompasses a wide range of vessel types including Turbine Installation Vessels (TIVs) which erect the turbines, through to a range of support and crew transfer vessels involved in turbine maintenance. At present these are a fairly small part of the global fleet, amounting to around a thousand vessels out of a global commercial fleet of c. 100,000 vessels, and accounting for less than 1% of the fleet by value.

However, offshore wind is set to grow rapidly in the coming years. A report in 2019 by the IEA projected that under current government policies (the 'SPS' scenario), installed capacity would increase by around 15 times to 342GW by 2040. Under a more concerted push to improve the sustainability of electricity generation (the 'SDS' scenario) this could increase by almost 25 times to 562GW. In order to achieve this, the amount of capacity installed annually would also increase significantly.

EXHIBIT 1

Current and projected offshore wind installed capacity and annual capacity additions

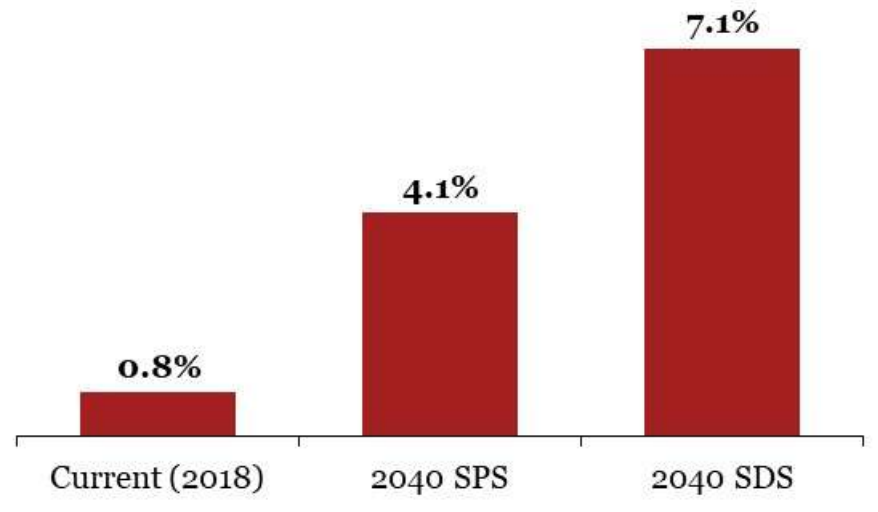


Source: IEA Offshore Wind Outlook 2019

This growth in installed offshore wind should translate directly into significant growth in the vessels serving the sector. The biggest impact will be on service vessels carrying out repair and maintenance on the much larger installed base, although these are typically smaller and less expensive than other vessels in the fleet. Growth in TIVs will be lower, reflecting the smaller increase in annual capacity additions, although these will also be required to work on replacements of the existing installed base. While it is difficult to project vessel values forward this far, the required growth in the number of vessels suggests that by 2040 offshore wind vessels should account for between 4% and 7% of the global fleet by value. To put this in context, offshore wind is set to become a category of equivalent importance to LNG or cruise today.

EXHIBIT 2

Current and projected offshore wind fleet value as share of total global fleet value

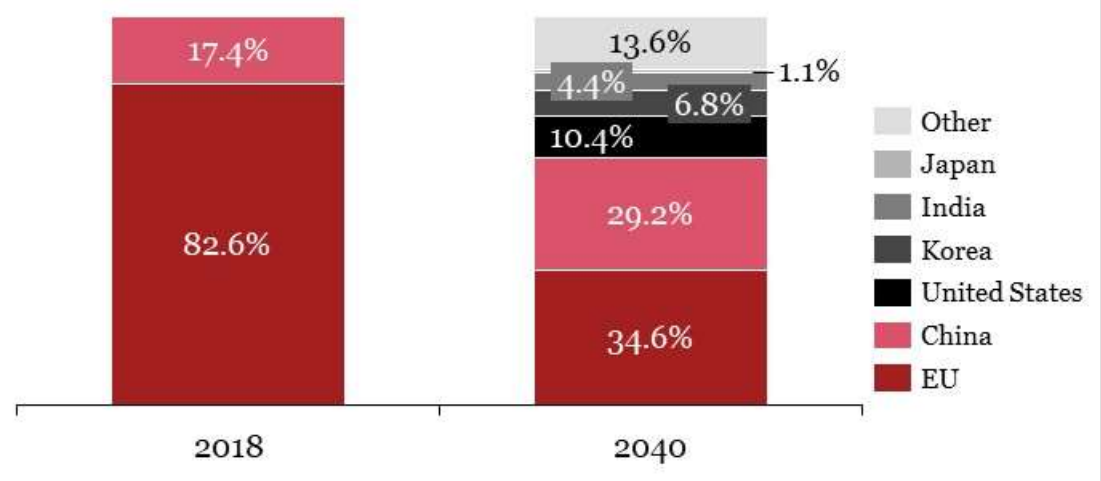


Source: Strategy& analysis

A global opportunity for European operators?

Europe is currently by far the leading region for offshore wind with over 80% of installed capacity. However, other regions are expected to show rapid growth in the coming years. This growth also needs to be taken in the context of the growing size of the overall market – for example while Korea is projected to remain a relatively small share of the overall market by 2020, in absolute terms its installed base is expected to be 25% larger than the current European base.

EXHIBIT 3
Offshore wind installed capacity by region (GW)



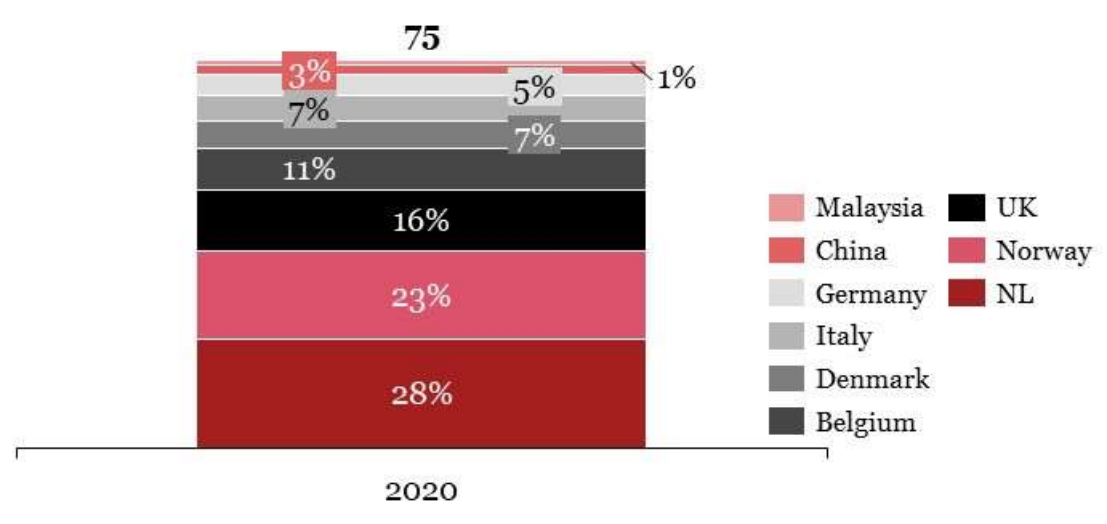
Source: IEA Offshore Wind Outlook 2019

At present the distribution of the offshore wind fleet reflects this European strength in the installed base. As Exhibit 4 shows, while there are a handful of Asian TIVs, the vast majority are operated by European companies. A similar pattern is seen in support vessels, with most of these operated by companies in countries bordering the North Sea, with c. 50% based in the UK alone.

As offshore wind develops in different regions, this potentially presents a significant opportunity for European offshore vessel operators to expand globally. Success in the offshore wind market is not simply a question of owning the vessels, but also of having the knowledge to operate them efficiently and safely in very demanding environments. The accumulated years of experience of European operators as well as their existing customer relationships should therefore position them to grow on a global scale. However, at the same time, there are a number of barriers to expansion (e.g. cabotage restrictions) which may limit the ability of these operators to grow outside of Europe. To understand how these might play out, the offshore oil and gas industry provides a useful comparator.

EXHIBIT 4

Turbine installation vessel operator nationalities (share of vessels)



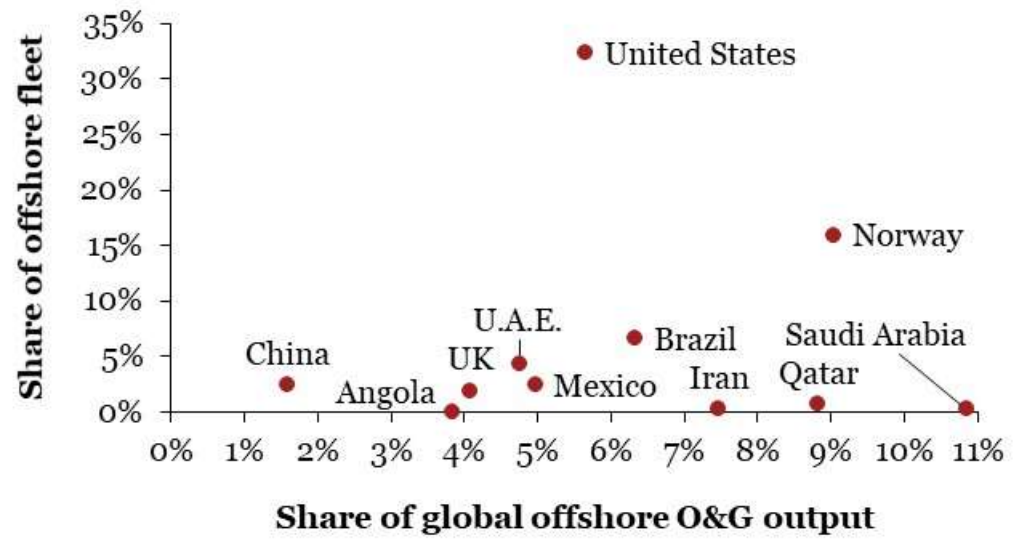
Source: Offshore Wind

Lessons from the offshore oil and gas industry

The first genuine offshore well was drilled off the coast of Louisiana in 1947, with several more wells in operation by 1950. This was followed by the development of fields in the North Sea in the 1960s. The offshore vessel industry grew rapidly in these regions to support this growth, developing a range of specialist vessels to deal with harsh offshore conditions. While other regions have subsequently come to outpace production in the Gulf of Mexico and North Sea, offshore vessel operators have benefited from the first mover advantage conferred by the head-start they gained here. As Exhibit 5 shows, US and Norwegian companies own a disproportionate share of offshore vessels relative to the production of these fields.

EXHIBIT 5

Offshore O&G production versus ownership of offshore vessels (PSVs) 2018



Note: ownership is determined by the nationality of the company which owns the vessels, rather than flag or current location of the vessel

Source: Clarksons, Rystad, IEA, Strategy& analysis

This view is further supported by analysis of the revenues of some of the large operators from these countries. Tidewater (US), Solstad (Norway), and Hornbeck (US) respectively derive 71%, 55%, and 36% of their revenue from countries outside of their 'home' basin, and between them have operations in most of the main offshore centres.

However, in addition to this first mover advantage, these companies have typically also had to adopt a range of other strategies to successfully internationalise:

- **Following existing customers:** The global offshore vessel operators have often been most successful at internationalising where they have been able to follow customers from their home markets (typically the IOCs) into new basins, leveraging existing relationships and working practices. This may prove harder in the wind turbine market where power utilities are typically more nationally based but there is

still opportunity to follow this route through building on relationships with turbine manufacturers, EPCs, etc.

- **Localisation of supply:** as new basins have developed, local governments have often sought to capture more of the value created by production within their local economies. In order to have access to these markets, global offshore operators have therefore had to adapt to these rules by using locally built vessels, training local staff, etc.

- **Technology leadership:** these companies have often been the leaders in introducing new more advanced vessel types. This offers a particular opportunity in the offshore wind sector where technology (e.g. around turbine height and construction techniques) continues to develop at pace

How will the market develop?

As with any industry in a nascent high-growth phase, there is a lot of uncertainty about how the market structure will evolve. Below we identify five key dynamics which will shape the future of the offshore wind vessel market.

1 Government intervention

- While the impact of subsidies and clean energy targets on offshore wind growth is well understood, less attention is given to the impact of maritime policy. Overly restrictive cabotage and local content rules can create a 'chicken and egg' problem where the industry cannot get off the ground without vessels to service it, but there is no incentive to invest in vessels without an existing industry
- Governments looking to rapidly grow the offshore wind sector should therefore look to flex cabotage and other rules to allow participation of the global offshore wind fleet in local markets

2 Managing capacity

- Capacity management is a perennial problem in shipping with ever-present cycles of over and under supply. This can be especially so in the growth stages of a new sector, where a relatively small number of vessels can make a big difference to the supply/demand balance
- Careful management of new builds will be required to ensure both a sufficient fleet to meet offshore wind roll-out targets while at the same time creating adequate returns for investors

3 New entrants

- Currently the sector is dominated by specialist providers, however, the recent signing of a LOI by Scorpio Bulkers to build a TIV may be the start of a range of new entrants
- As a structural growth sector, the attractions of offshore wind are clear, however new entrants will have to be careful not to flood the market with excess capacity. In addition, the skills required to successfully operate these vessels are significantly different to those required in more traditional vessel segments

4 Value chain collaboration

- Offshore wind's impressive growth has in part been driven by rapid progress in generation technology, particularly regarding turbine height
- Installation and maintenance providers will need to ensure that maritime equipment does not become a bottleneck to further improvement. Service providers who work with turbine manufacturers, project developers, and prime contractors to push forward the technological boundaries can insulate themselves from playing in the more commoditised end of the market

5 Installation efficiency

- As well as improving technology, recent years have also seen significant progress in the efficiency and speed of the installation process. This offers another lever for current market leaders to win in developing markets, given their significant accumulated experience in delivering projects
- Continued progress on this front will also affect the overall capacity the industry requires to meet roll-out targets

Key questions for market participants

Given the rapid growth of the offshore wind market, and the complexities of the dynamics discussed above, there are significant strategic implications for all participants. While not exhaustive, below are some of the key questions which different parts of the industry should be asking.

Existing owners	• How can we internationalise our business and take advantage of the huge growth of offshore wind in new regions? • How do we cement existing market leadership (e.g. through technological leadership and collaboration with other participants in the value chain)? • What is the growth outlook and therefore an appropriate pace of capacity additions?
New entrants	• Which segments / geographies are growing fast enough to support new entrants? • How do we build the skills and capabilities necessary to compete with established owners / operators?
Governments	• How do we balance the competing needs of growing offshore wind output as quickly as possible with building domestic capacity in fleet and services? • Should we adapt cabotage and other maritime regulations to encourage faster uptake of offshore wind?
Manufacturers	• How do I best cooperate with installation and maintenance providers to accelerate adoption of newer technology (e.g. increased height, new foundation types)
Shipbrokers	• Is there a major new chartering / S&P sector emerging and how best do we enter it?

About the author

David Smith advises clients in the maritime and logistics industries for Strategy&, PwC's strategy consulting business. He works with shipping companies and maritime service providers, and specialises in corporate strategy and commercial due diligence. Based in London, he is a Director with PwC UK.

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