A WORD ABOUT WIND

JUNE 2015

FUNDING OFFSHORE

The financing market for offshore wind in Europe and beyond

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EDITORIAL

by Richard Heap,
editor at A Word About Wind

"If you are a known developer with a good plan and support from the government then finding willing investors is relatively simple."

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Securing finance is a vital step for any project, but it is just one step.

We were reminded about this in May when utility E.On announced it had reached financial close on the £1.3bn Rampion wind farm, which it is looking to build off the UK south coast.

E.On made the announcement about the 400MW project after entering a partnership with the UK Green Investment Bank, which has paid £236m for an undisclosed stake. Offshore construction is due to begin in 2016 with completion scheduled for 2018.

This is clearly good news for the team behind the project and there is every indication that things will proceed as planned. Even so, when projects like this reach financial close, there can be a sense that this is job done. In reality, things have only just begun.

You see, reaching financial close for an offshore wind farm in Europe is just not that big a challenge at present. If you are a known developer with a good plan and support from the government then finding willing investors is relatively simple (see p.12).

This may seem counterintuitive. Projects are getting larger and further from shore, and so the risks are increasing. This means that developers need to find more money if they are to make projects happen.

And yet, more often than not, developers are in a position where they can choose between bidders. This is partly because, as Christine Brockwell writes on p.18, there is such a wide range of ways that investors can get involved.

The scale of the projects may mean that balance sheet financing does not work, but there are other funding mechanisms that have stepped in. This is the result of gradual evolution in the sector that will continue in coming years, as Keiji Okagaki writes on p.9.

It is a good position to be in, and means that, in Europe, reaching financial close is not the huge milestone it once was. Investors are pretty much falling over each other to lend to developers.

That is not to say financial close is not important. It is, and we can see how important in the failure of 468MW US scheme Cape Wind to reach financial close by the end of 2014 (see p.21), as it gave National Grid and NStar the chance to walk away from power deals.

It was always going to be tough for Cape Wind Associates to take a huge scheme into a completely untested market, where a supply chain for offshore wind farms does not exist.

But we have not seen a European scheme fall apart in the same way as Cape Wind. Over here, the big funding challenge does not come from financial markets, but governments.

In UK waters, for instance, it is still vital for planned offshore wind farms to gain support under the government's Contracts for Difference or Renewables Obligation regimes. This gives project teams the confidence that they will be able to sell their energy for fixed prices.

For Rampion, that support is set to come from the Renewables Obligation. That means the money is all sorted. Now onto the next step. ■

Funding Offshore is our third special report of 2015. For more information about our special reports programme, please get in touch.

If you want to contact me then call, find me on Twitter (@RichHeap), or email: richard@awordaboutwind.com

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LM WIND POWER

ENTERING CHOPPY WATERS

The offshore wind sector needs growth in emerging markets in Europe, Asia and the Americas if it is to meet its 2030 goals.

In the UK and Germany, offshore wind faces uncertainty on the future of financial support; while, in China, growth is slower than expected.

Huge turbines. Huge projects. Huge potential. This year, global offshore wind is set to enjoy its biggest year to date.

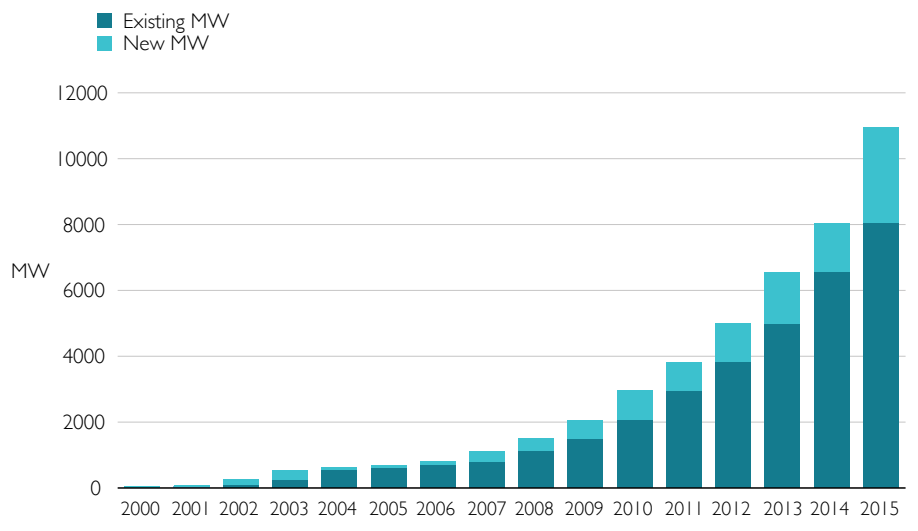
Capacity in the offshore wind sector now exceeds 8.8GW worldwide, and 3.9GW of projects are set to complete this year. This is over double the 1.7GW of schemes completed last year, and Germany is leading this growth with 2.1GW of installations, ahead of China and the UK.

But growth is not set to continue at this rate over the next three years. Consultancy GlobalData has forecast that projects totalling less than 3.3GW are due to complete in 2016 and, after that, growth will slow further. In two of the world's largest offshore wind markets — the UK and Germany — the industry is facing uncertainty on the future of financial support for offshore wind; while, in China, growth is happening at a slower rate than expected.

This raises some big questions for those working in the sector.

First, how confident can the industry be in the growth prospects of established offshore wind markets? And second, are we likely to see the emergence of new markets in Europe, Asia and the Americas?

Offshore wind installations (MW) in Europe since 2000



Source: EWEA / A Word About Wind

DOMINANT EUROPEAN PAIR

Europe continues to dominate this part of the wind sector, with wind farms totalling 2.9GW set to be completed in European waters in the next year (see graph, p.5). Most of these (2.1GW) are in German waters, including the 288MW DanTysk project by Vattenfall and Stadtwerke Munchen that was commissioned in April; and the 295MW Nordsee Ost by RWE in May.

Other major German projects completing this year include the 400MW Global Tech 1; the 312MW Borkum Riffgrund; and the 288MW Amrumbank West.

However, activity will not continue at this level for the next three years.

This year, the figure for installations is being inflated by delays to some projects after Germany struggled to develop its offshore grid; and is also the result of developers looking to take advantage of generous subsidies before they expire in 2017. Meanwhile, the German government last year cut by one third the target for offshore wind installations in 2020, to 6.5GW.

The country is also replacing its existing renewable energy laws with a new auction system for projects set to be completed from 2021 onwards. The aim is to promote competition but the result will be confusion, and one significant challenge for the government is that it may face legal challenges from developers that have already been given licenses for projects.

Even with its ongoing projects, Germany will still trail behind the UK as the world's largest offshore wind market (see table, below). Projects set to be commissioned in UK waters in 2015 include RWE's 576MW Gwynt y Mor and Dong Energy's 210MW Westermost Rough. The pair are among the top three developers and owners by market share (see graph, p.7).

On the face of it, the pipeline of projects in UK waters also looks healthy.

So far, the UK government has given financial support to a series of major projects in its Contracts for Difference (CfD) subsidy regime. In April 2014, it gave CfDs to five offshore wind farms — 1.2GW Hornsea 1, 664MW Beatrice, 660MW Walney 3, 402MW Dudgeon, and the 258MW Burbo Bank extension — and followed this in February with CfDs for the 714MW East Anglia 1 and 448MW Neart na Gaoithe. That looks impressive.

However, there are no large projects due to complete in UK waters in 2016, with only the 50MW extension by Vattenfall of its 90MW Kentish Flats wind farm set to complete next year; and no guarantee that projects with CfDs will actually happen. The government has also cast doubt on the second CfD auction round, which is due to start in October, after its Low Carbon Contracts Company said in March this was at the government's discretion. Funding levels for that round have not yet been set.

The hostile attitude of the UK's Conservative Party, which won a majority in the May election, has also raised concerns about the future of renewables. The party has backed offshore wind since 2010 in coalition with the Liberal Democrats, but it has not yet confirmed whether it will pursue the same direction now it is ruling alone.

The over-exposure of offshore wind to the UK and Germany should concern those in the sector, as it means it is reliant on support from a small number of politicians.

Outside Europe, China is the largest offshore wind market with 658MW of capacity now and plans to install 817MW in 2015. Consultancy GlobalData said it expected the country to continue to open new offshore capacity of around 1GW a year for the next few years. In most countries this would be significant, but it is minuscule in terms of China's overall energy use; and

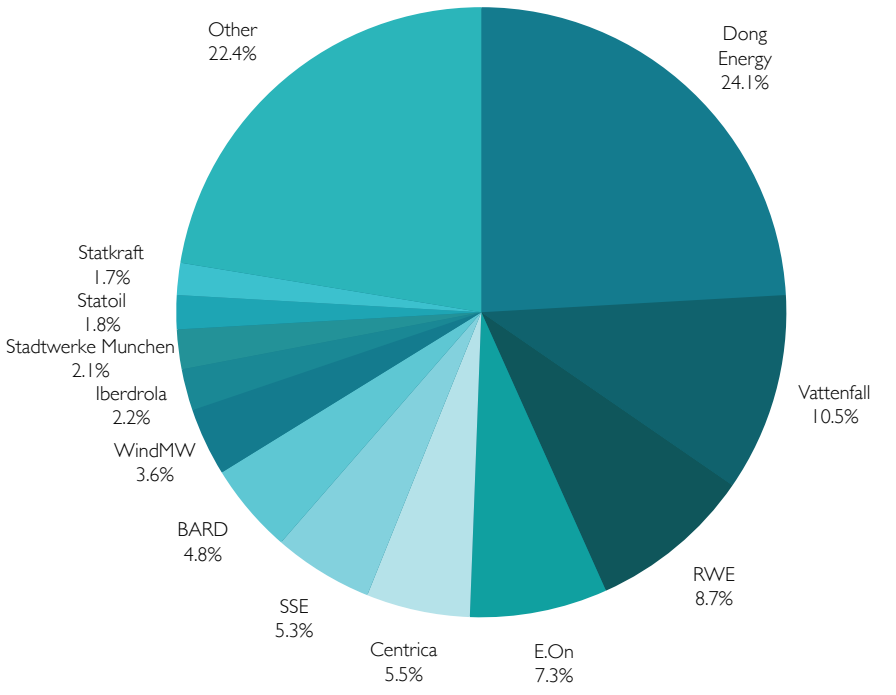
> The over-exposure of this sector to the UK and Germany means the sector is reliant on a small number of politicians.

Offshore wind markets by installed capacity in 2014

Country	No. of farms	No. of turbines	Capacity installed (MW)
UK	24	1301	4494
Denmark	12	513	1271
Germany	16	258	1049
Belgium	5	182	713
China	-	-	658
Netherlands	5	124	247
Sweden	6	91	212
Japan	5	24	50
Finland	2	9	26
Republic of Ireland	1	7	25
Spain	1	1	5
South Korea	1	1	5
Norway	1	1	2
Portugal	1	1	2
US	1	1	0.02

Source: EWEA / A Word About Wind

Market share of Europe's offshore wind developers



Source: EWEA

offshore wind feed-in tariffs set in summer 2014 were underwhelming.

So we are seeing uncertainty in the UK and Germany, and cool backing for the offshore wind sector in China. This means that it is crucial for the offshore wind sector to grow in new markets if it is to establish itself globally. The next five years are vital.

> It is crucial for this sector to grow in new markets if it is to establish itself globally. The next five years are vital.

In March, for instance, Ernst & Young said in a report on offshore wind that 2020 would be a "make-or-break" year for the sector. It said the sector would be regarded as a failure if it either did not achieve 20GW of capacity in European waters in 2020; or if it was not close to the target of €100/MWh for power generated by offshore wind farms. This is key if the sector is to push on further to 2030.

EMERGING EUROPEAN MARKETS

While the UK and Germany may be Europe's dominant offshore markets, they are not the only ones. Belgium, Denmark and the Netherlands make up the rest of Europe's top five by installed capacity, and all have plans that should help bolster the pipeline of projects.

The European Union has encouraged countries to get into the sector, including through its '20-20-20' Renewable Energy Directive in 2009. This commits to targets including 20% of EU energy demand from renewable sources, such as offshore wind, by 2020.

One of the most important projects in Europe is the 400MW Horns Rev 3 in Danish waters. In February, the Danish Energy Agency chose Swedish utility Vattenfall to develop the project off Denmark's west coast.

This scheme is significant because Vattenfall's winning bid equated to a cost of €103/MWh, which is 32% lower than Denmark's last offshore wind farm, the 400MW Anholt, and is close to the Europe-wide target of €100/MWh. Projects that achieve prices like this will be vital if offshore wind is to prove its long-term credentials.

Meanwhile, in Belgium, the offshore installed capacity grew to 713MW last year as the 141MW second phase of the NorthWind offshore wind farm came online. Other projects in the pipeline include the 165MW Nobelwind and the 135MW Belwind 2, although the rollout of more offshore wind farms in Belgian waters relies on improvements to the offshore grid.

The other significant scheme in European waters is Northland Power's 600MW Gemini, which is located 85km off the coast of the Netherlands. The project reached financial close in May 2014 and it scheduled to complete by 2017. The Dutch parliament has also approved plans to develop up to 3.5GW of offshore wind farms in three zones off the Dutch coast; and the 144MW Westmeerwind is due to complete in 2016.

Progress in these markets would undoubtedly strengthen European offshore wind, and should help to bridge part of the construction gap we expect to see over the next few years. They can also help if the UK and Germany see a prolonged slowdown.

There is also progress in markets that do not yet have installed offshore capacity. One of these in France, which has set a goal of 15GW of offshore wind by 2030, and last year awarded a GDF Suez-led consortium the right to develop two wind farms totalling 1GW off its coast. Little has happened since then but, by coming out with offshore wind plans, this has at least given the industry faith that there will be opportunities.

ASIA AND THE AMERICAS

Outside Europe, the largest market is China. Countries such as India, Japan, South Korea, Taiwan and the US have been looking to build offshore wind farms, but they have achieved little. The prospects of any of them building an offshore wind sector of any significant size by 2020 looks remote.

In Asia, the Indian government has been looking to develop a roadmap for offshore wind development since last year, and last September the government hinted that it would look to develop 1GW of offshore wind by 2020. However, we have not seen any progress since then and it is more likely that, by 2020, India would have a few pilot schemes but little else.

The government of Taiwan has targets too. It set an ambition back in 2012 for 600MW of offshore wind by 2020 and 3GW by 2030; and in June there was progress on its first project. Formosa Wind Power ordered two Siemens 4MW turbines for a pilot project that could open the way for a 128MW wind farm off the coast of Miaoli County.

And in South Korea, while it has installed one turbine of 5MW, we see little evidence of it making good on the plan revealed in 2010 for a giant 2.5GW offshore wind farm.

The most exciting markets outside Europe are Japan and the US. In Japan, there is currently 50MW of offshore wind installed, and the country has been looking to press on with the development of renewable energy sources after the 2011 Fukushima-Daiichi disaster, including offshore wind farms. There are currently six projects totalling 504MW in the development process with construction due to start in 2020. There are also a further 12 projects in the planning stage, which total 874MW.

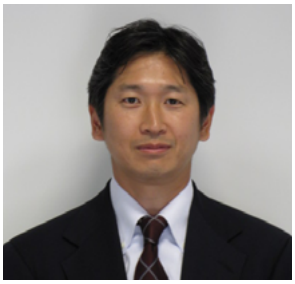
Meanwhile, in the US, there is only one project being built — the 30MW Block Island — and the sector has been experiencing major problems this year (see p.21). This is a timely reminder about how fragile the offshore wind sector remains, and why it is so vital for this fledgling industry that it continues to grow outside of its leading markets.

Ernst & Young has said that overall investment in offshore wind could reach €690bn by 2040.

Globally, Ernst & Young said overall investment in offshore wind could reach €690bn by 2040. This would present a huge market for European players that choose to invest in skills and innovation over the next five years. If the industry is to reach this stage then it needs strong support from businesses, governments and the public.

It will only get that far if it proves its worth in multiple markets in the next five years. ■

FINANCE MUST KEEP EVOLVING



Keiji Okagaki manages power projects in Europe at Marubeni Corporation

www.marubeni.com

The model of balance sheet financing an offshore wind farm to operational stage is not able to continue, and the industry requires incremental change.

During my four years at Marubeni Europower much has changed in offshore wind. In particular, the financing of large offshore projects has changed dramatically.

It used to be that large utilities would balance sheet finance the build of wind farms, both onshore and offshore. This may be because those projects were smaller and so they did not require as much capital expenditure as now; or it may be because the industry was so new that lenders were hesitant to lend in a market with too many unknown risks. When utilities had strong balance sheets this did not matter that much.

However now, with utilities struggling financially and projects getting larger, the way these projects are financed has evolved — and has had to evolve.

In general, the trend I have witnessed is that utilities want to find partners earlier to share the cost of these large projects. Marubeni has been happy to take the lead on this. Whilst the 2011 interest in Dong's Gunfleet Sands project was purchased in an operational wind farm, it was the first holdco financing of an offshore wind farm in the UK. This was followed by our involvement in Westermost Rough, which also used the holdco structure, but with construction risk.

> "With utilities struggling and projects getting larger, the way projects are financed has had to evolve."

Both projects had other firsts, which included bringing Nippon Export & Investment Insurance (NEXI) into offshore wind (Gunfleet Sands); financing a Siemens 6MW WTG

"This isn't a one-way process where we should simply wait for the banks."

project; and securing the Japan Bank for International Cooperation (JBIC) for their first offshore wind project (Westermost Rough). Gunfleet Sands laid the platform for our Westermost Rough transaction as, without establishing the holdco financing model, the latter transaction would have proved too challenging.

Other market players have also helped this evolution into project finance of offshore wind, both in the UK and in Europe more broadly. Some have pushed the boundaries and helped establish industry finance norms. These include the 70:30 debt to equity ratio for generation assets; 85:15 for OFTO; 'market standard' cover ratios; and 15-year plus construction tenors.

These have all helped reduce the guesswork for financing offshore wind assets. Ultimately, this promotes competition that helps bring down the cost of finance and the cost of electricity.

I would emphasise that, whilst these norms have been established over the last few years, it has been a constant evolutionary process. This evolution isn't finished yet.

Eventually, I would hope to see greater gearing applied to offshore wind projects and more competitive cover ratios. This is not a one-way process where we we should simply wait for the banks. Market players should show new techniques and technologies that can include more accurate forecasting (of wind, development costs, merchant power, and so on) or more robust WTGs with longer life that give lenders comfort to be able to provide this.

While it is a long way off, this process may eventually lead to commercial offshore floating wind farms that are able to be financed before construction. To get there, we will require many more firsts. ■

OFFSHORE LENDING PARTY

Interest from major institutions and innovative deal structures are helping the offshore wind sector develop bigger projects further from shore.

Offshore wind developers need more money than ever to fund projects. Even so, they are spoilt for choice, and the question is not whether they will find the money, but more who they will turn down.

This increasing interest from major investors goes hand-in-hand with evolution in funding structures; and other fundamental changes in the sector, including the nature of the projects that need funding. So, what is happening with projects?

PROJECTS DRIVE FUNDING SHIFTS

First, offshore wind farms are getting larger. This month, RWE and Stadtwerke Munchen are set to switch on the 576MW Gwynt y Mor in Liverpool Bay, off the UK coast. This is the world's second-largest offshore wind farm after the 630MW London Array; and even larger ones are yet to come. In February, the UK government approved the 2.4GW Dogger Bank Creyke Beck scheme in the North Sea, comprised of two 1.2GW projects.

The latter project is still a long way from happening, but the fact it is even being considered shows that developers are getting increasingly ambitious. These firms will want investors that match their ambitions.

Second, offshore projects are also moving further from shore and into deeper waters. At the end of 2014, the average water depth for operational offshore wind farms in European waters was 22.4m, according to the European Wind Energy Association, while the average distance to shore was 32.9km. Both of these figures will get larger in the years up to 2020. This will increase the technical complexity of offshore wind farms, and their costs too.

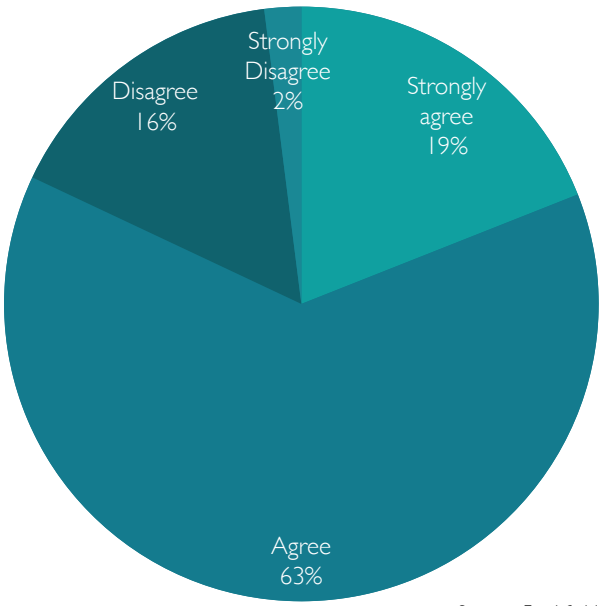
These trends are driving significant changes in the ways that projects are financed. Over the last year, the utilities that are developing these projects have moved further away from straight balance sheet funding, and are instead finding more innovative ways to fund projects. They have also been recycling capital by selling stakes in operational schemes.

In deep: Projects are moving further from shore

Source: Sheringham Shoal by Statkraft via Flickr

Offshore experts back innovative funding structures

To what extent do you agree that developers / utilities will need to create increasingly innovative project structures in order to ensure offshore wind projects are financed?



Source: Freshfields Bruckhaus Deringer

Historically, offshore wind developers have looked to finance projects using their own funds but, as schemes get larger, this is a less viable option.

This move towards more innovative structures is set to continue, according to a survey of 300 senior professionals in offshore wind by law firm Freshfields Bruckhaus Deringer last year. This showed that 82% of respondents thought that offshore wind developers needed to look at more innovative funding methods if they were to finance their schemes (see graph, above).

UTILITIES LEAD OFFSHORE CHARGE

Historically, offshore wind developers have looked to finance projects using their own funds but, as schemes get larger, this is a less viable option. Utilities are either unwilling to fund large and risky schemes using their own money; or are simply unable to do so. It is usually cheaper for utilities to use project finance for schemes rather than using their own equity.

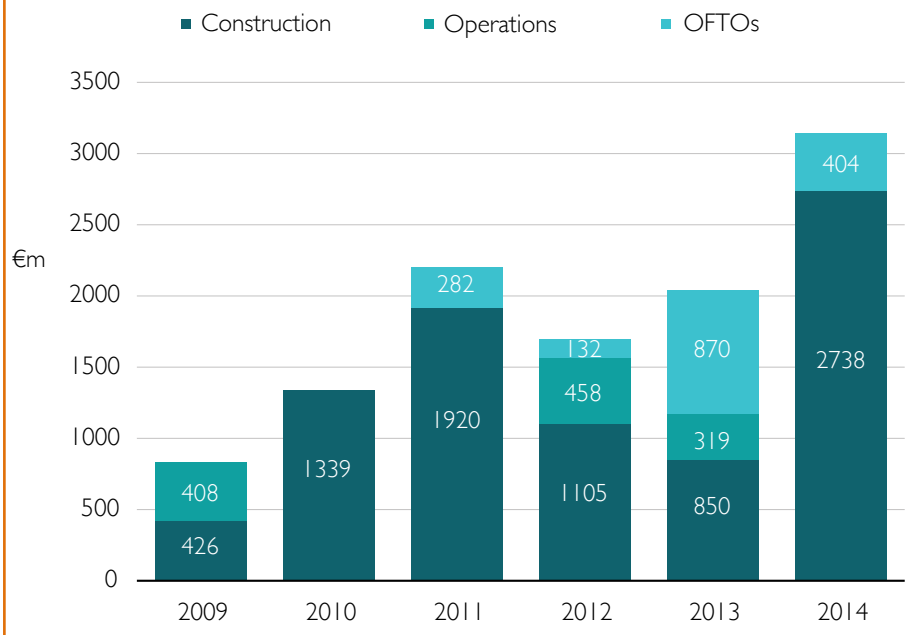
The most popular alternative is non-recourse fixed-term debt. In 2014, non-recourse debt worth €3.1bn was used to fund projects, including transmission links, in UK waters (see graph, left). This was 43% higher than the €2.2bn used in the previous highest year, in 2011.

Last year, three non-recourse financings for new wind farms reached financial close, with a total value of over €2.7bn. These were the €2.1bn financing at the 600MW Gemini; €444m at the 210MW Westermost Rough; and €320m at the the 144MW Westmeerwind.

The attractions of non-recourse debt to fund projects are clear. The borrower gets certainty over how long they have to repay their debt, and they only have to pay off the debt using funds generated from that particular project. The 'non-recourse' elements means that, if the scheme in question faces a problem, the lender does not have recourse to seek repayments from the parent company. This means greater protection for the developer.

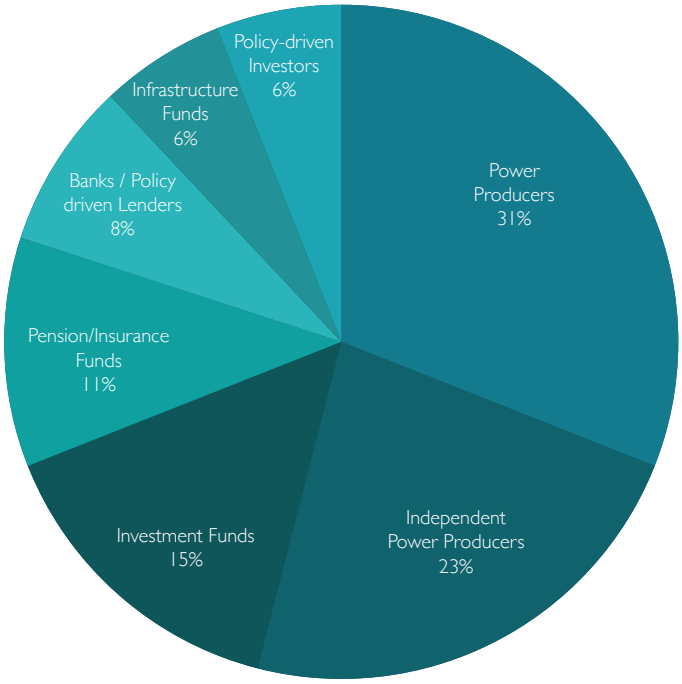
Developers can typically borrow at loan-to-value ratios of around 70%. This is less than the 85%-90% loan-to-value ratios typically available in onshore wind, and this

Non-recourse debt in European offshore wind 2009-2014



Source: EWEA

European offshore equity investors by type in 2014



Source: EWEA

reflects the fact that lenders see investing in the offshore wind sector as riskier.

Matthew Taylor, director at Green Giraffe, says utilities could safeguard their balance sheets — and, in particular, their credit rating — while simultaneously cutting the cost of funding projects by using a 'capital light' structure. This is where utilities enter partnerships with other developers or investors to push their schemes forward; and then use low-cost project finance.

The most recent example is German utility RWE's subsidiary RWE Innogy at the 332MW Nordsee One project in German waters. In September, RWE sold 85% stakes in three projects — Nordsee 1, 2 and 3 — to Canadian developer Northland Power, while holding on to the remaining 15% stake. Then, in March, it raised 70% of the first project's required capital costs using an €840m non-recourse secured construction and term loan from a group of ten commercial lenders. The project is now being built.

The logic is compelling. If RWE holds a 15% stake in the project and only has to raise 30% of the construction cost of the project, this means it only needs to commit around 4.5% of the total cost of the project. Taylor says the benefits to offshore wind developers are clear.

"Debt is now widely available for offshore wind construction from both banks and institutional investors – and, with a current all-in cost in the 3%-4% range, it is an attractive solution for investors," he says.

"However, non-recourse debt is not accepted yet as a deconsolidation tool by rating agencies, and must be accompanied by an equity transaction, whereby the utility only retains a minority stake in order to for the asset to be taken off its balance sheet from a ratings perspective. The combination of a sale and financing allows the utility to achieve almost complete recycling of capital; credit rating relief; and also allows it to stay involved in the operational aspects of the project."

"The recent success of Nordsee 1 will no doubt mean we will see an increasing number of these transactions for pre-construction offshore wind projects in the future."

Of course, utilities are not the only companies developing wind farms in European waters. In 2014, Blackstone-backed developer WindMW was the largest developer in European offshore wind in 2014, when ranked by ownership of projects completed during the year, after it completed the 288MW Meerwind Sud/Ost. Even so, the familiar names of RWE, Dong Energy, Iberdrola and Stadtwerke Munchen make up the rest of the top five.

The fact utilities are looking to use innovative structures to fund their projects opens up new opportunities for other investors to get involved in the market.

So where is the money going to come from over the next two years? And will there be enough of it?

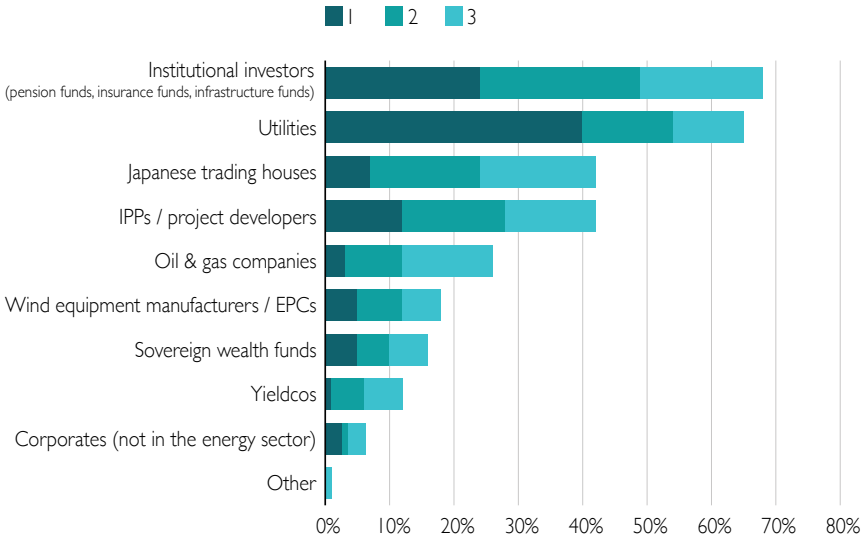
COMPETITION TO LEND

Figures from EWEA show that equity in the European offshore market is coming from a diverse range of sources (see graph, p.14). While almost one-third (31%) was from utilities, we also saw interest from independent power producers (23%), investment funds (15%), and pension or insurance funds (11%). This is likely to shift over the next year.

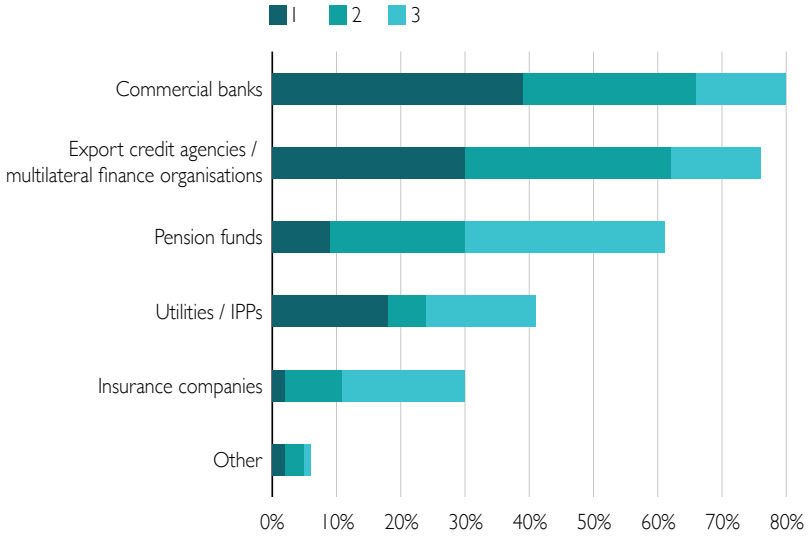
Freshfields Bruckhaus Deringer reported in its survey of offshore wind experts that institutions and Japanese trading houses would be among the top equity investors in offshore wind over the next year (see top graph, p.15). Over two thirds (68%) ex-

Most active investor types over the next year

Which three types of investors do you expect to see acquiring/investing equity in offshore wind projects in the next 18 months? (One being the most active and three being the least)



Which three types of investors do you expect to see provide debt to offshore wind assets in the next 18 months? (One being the most active and three being the least active)



Source: Freshfields Bruckhaus Deringer

Operational offshore projects are attractive for institutions because they generate more generous returns than other types of investments at present.

pected institutions to be one of the three most active investor types, ahead of utilities (65%), Japanese trading houses (42%) and independent power producers (42%).

Meanwhile, on the debt side (see bottom graph, above), respondents predicted that commercial banks (80%) would be one of the three most active lender types, ahead of export credit agencies (76%) and pension funds (61%). Operational offshore projects are attractive for institutions because they generate more generous returns than other types of investments at present, given the historic low interest rates in Europe, including the UK, and the US.

One senior banker that did not want to be identified told *A Word About Wind* that there is currently "intense competition" on the debt side from a core group of 20-30 banks, but that the interest from some depends on who the developer is. For instance, Northland Power and RWE were able to attract lenders including Bank of Montreal, Export Development Canada and National Bank of Canada to back the 332MW Nordsee 1 due to Northland's Canadian background.

Other big names in the market include ABN Amro, Bank of Tokyo Mitsubishi, BNP Paribas, Caixa, CIBC, Commerzbank, Danish export credit agency EKF, Euler Hermes,

"Some developers could have got complacent over the risk profile of the projects because they haven't had to submit as much information as previously."

Japan Bank for International Corporation, KfW IPEX, Mizuho, Natixis, Rabobank, Santander, Siemens Financial Services, and Societe Generale. It is a strong line-up.

Our concern is not that there is a lack of funding coming through but rather that there might not be enough projects for them to invest in and to hold their interest (see 'Entering Choppy Waters', p.5).

New installations in the German market are set to slow from 2017 as the country brings in new support mechanisms (see box, below); and projects in UK waters are heavily reliant on the Contracts for Difference regime. These are Europe's two leading offshore markets and, if they both see a slowdown, this could lead to a reduction in interest in offshore from investors. However, growth in Belgium, Denmark, France and the Netherlands should fill any gaps.

TAKING ON UNKNOWN RISKS

Competition between these lenders has increased because of the perception that offshore wind is now an established sector, and lenders are competing on the terms and sizes of the loans they are offering. The questions for lenders are how they differentiate themselves from other lenders in a crowded market; and whether their view on the sector is correct.

Offshore wind adviser Simon Luby says he is seeing more investors getting involved in the sector, but that this could affect the overall quality of projects.

"I don't think there's any shortage of money overall. I think sometimes there's actually too much money, and developers are playing banks off against each other," he says.

He adds that, without good advice and proper project assessments, this could harm the quality of projects and set the industry back. With easier access to finance, he warns that developers are not removing risk from projects like they should.

"Some developers could have got complacent over the risk profile of the project because they haven't had to submit as much information as previously and, because the objective is to achieve financial close and raise funds, sights are not set on the real physical project and its delivery," he says.

"Project teams want to make projects as good as they can, but those who come in on the financial side sometimes seem to be focused only on getting as much debt off the banks as possible, with as little oversight and diligence as possible. They aren't trying to make the projects physically better. The focus is simply on 'doing the deal'."

Developers grapple with changing incentives

There is no shortage of investors looking to back good schemes in European waters, but that does not mean funding schemes is totally straightforward.

Developers are still reliant on government subsidies if they are to sell their power for a price that makes the scheme financially viable — and these subsidy regimes are always subject to political change.

In the UK, it is crucial for developers to secure support under the previous support regime, the Renewables Obligation; or the Contracts for Difference (CfD) regime.

Seven offshore wind farms have already secured support under CfDs, including the 1.2GW Hornsea 1 and 714MW East Anglia 1. Under CfDs, the government tops up the market price of the energy sold from the project to a predetermined 'strike prices'. This gives developers the certainty that they can push ahead with schemes knowing the price of their energy is fixed.

However, the UK government has offered no long-term certainty over the regime. There is due to be a second auction round this October where projects can bid for support, but the government has yet to announce the amount of funding available. This is a major concern for the industry given the Conservative government's general hostility to wind energy.

Meanwhile, the German government has been changing the support it offers to offshore wind farms in its waters. In summer 2014, the government changed the Renewable Energies Act, with a provision that offshore wind subsidies from 2017 would be worked out based on industry tenders, rather than being set by central government policy.

Germany's energy ministry is this year starting to work out how such a model would work, and is experimenting with a similar model in onshore solar. Any uncertainty over subsidies for offshore wind farms would, however, have developers and investors questioning whether their schemes will be financially viable. This is an extra headache for the industry.

The other emerging offshore wind markets in Europe are embracing similar subsidies for schemes in their waters as the feed-in tariffs in use in the UK and Germany. The result is that offshore wind projects in the key markets across Europe are dependent on supportive politicians if they are to succeed.

It is on subsidies, rather than the funding markets, where projects are most likely to stumble financially.

Investors without experience have options to invest that do not mean getting involved directly in an operational project, or early in construction.

While the risks of building offshore wind farms have come down, they have not come down as far as some financial advisers like to portray. The sector's continuing success requires an ongoing focus on quality and technical excellence as project and turbine sizes increase, in order to avoid stumbling along the way.

Chris Morgan, chief executive at developer RES Offshore, says there are some investors who do not understand the risks of putting money into offshore wind farms but that most investors have a basic understanding; and developers can help them. He adds that investors without experience in offshore wind have options to invest that do not mean getting involved directly in an operational project, or early in construction. The UK Green Investment Bank, for example, has set up an offshore wind fund that should enable investors to get involved in the sector but with less exposure to risks in the sector.

UK GIB is looking to raise £1bn from investors for its fund to invest in offshore wind in UK waters. In April, the bank announced a first close of £463m, from investors including UK pension funds and a sovereign wealth fund. This is the first fund in the world dedicated to offshore wind; is aiming to be the UK's largest renewables fund; and, alongside this fund, the bank has raised a significant amount of investor capital to co-invest in projects.

The bank's most recent acquisition, in May, was a stake in the planned 400MW Rampion offshore wind farm for £236m.

Edward Northam, head of investment banking at the UK Green Investment Bank, says that, by providing construction-phase funding, it was supporting new schemes; and encouraging investors to get involved in schemes at both the development and construction phases.

He says other groups may look to replicate the funding model now that they have seen it works. This would bring more investors into an already-competitive sector.

A ready supply of finance is, in general, a nice problem for developers to have. It shows that if there are good projects in the market, then the investors should be there too. ■

VARIETY OF DEALS ATTRACTS INSTITUTIONS

Christine Brockwell is managing director and head of corporate development at Global Capital Finance

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Institutions are increasingly confident about investing in offshore wind, and there are plenty of structures to ease them into the market.

Investors looking for cash yield are increasingly turning to renewables as a source of stable and predictable cash flows. And, for large investors, offshore wind is one of the most attractive sectors.

Offshore wind offers an opportunity for significant investment size — upwards of €250m — through a single asset, and often with far less deal complexity than is inherent in comparable size portfolio deals.

Institutional investors will also find that offshore wind is an established market that is making significant strides towards maturity, through total capital expenditure and operations & maintenance (O&M) cost saving initiatives per MW, brought about by the commercialisation of larger turbines.

> "The beauty of offshore wind as an infrastructure investment is the variety of entry points."

The beauty of offshore wind as an infrastructure investment is the variety of entry points one can choose depending on preferred risk appetite and strategic mandate.

Parties with strategic interest such as Northland Power have entered at the development stage (at Gemini and Nordsee 1, 2 and 3) to take an active role in the construction and operations of the asset, whereas those wanting to take a more passive role and receive immediate cash flow, such as Greencoat UK Wind (at Rhyl Flats), have entered at the operational stage.

Construction stage investments come in all shapes and sizes. Some offshore wind project sponsors see value in forming partnerships with financial investors to share the construction risk, and others prefer to

"Now that the Netherlands, Belgium and France are gaining momentum, the market has never offered more opportunity."

take the construction risk while sharing the construction cost for a higher sales price premium. In the latter case, the sponsor takes responsibility for cost overruns while the financial investor makes stage payments through the construction phase.

The market has seen a variety of deal structures such as forward-purchase agreements, fixed-cost schedules and EPC wraps developed by parties that find it mutually beneficial to participate during the construction phase, but do not necessarily want to share all the risk.

In the near term, Europe has more than ten projects where construction is due to start during the next few years. The main sponsors of these opportunities include Dong Energy, Scottish Power Renewables and Mainstream Renewable Power. The general market understanding is that these parties seek partners through considerably different deal structures.

Operating asset transactions are generally more straightforward and focus on PPA and O&M structures, terms and conditions. For the more conservative financial investors active in the UK, route-to-market PPAs with characteristics of financial swap transactions, such as caps and floors, have been struck. Others have opted to take electricity price risk and forego a floor price.

It is generally the utilities executing upon their capital rotation plans that sell down minority (Statoil and Statkraft – Sheringham Schoal) or majority (E.On – Rödsand II) stakes in operating wind farms. Although these opportunities seem to present themselves more rarely, there are operational asset owners currently in the process of selling their assets, as well as ones that plan to do so within the next 12 months.

Given the multiple entry points for investment, there is a steady stream of opportunities coming from this niche market within the renewables space. Now that the Netherlands, Belgium and France are gaining momentum, the market has never offered more opportunity.

There is not 'one' structure that developers consistently use, but offshore wind is a small enough market that serious investors can meet with the key offshore wind developers to help shape the offering toward a preferred structure. ■

SINK OR SWIM FOR THE STATES

Troubles at flagship project Cape Wind have highlighted the wide range of challenges the US faces to establish wind farms off its coastlines.

Fourteen years. That's a long time for a project to go nowhere.

And yet, that is what has happened to Cape Wind, the 130-turbine 468MW project planned off the coast of Massachusetts in the US. Twelve months ago it looked likely to become the first offshore wind farm in US waters. Now it is questionable whether it will happen at all.

The problems at Cape Wind have shown up a wide range of challenges to offshore wind in the US, from the shaky financial incentives and sceptical politicians to the lack of expertise or a supply chain. The sector also faces enemies with formidable financial firepower. This will prompt investors to wonder whether there are opportunities to invest in the US offshore wind sector; and, if opportunities do exist, whether the risks are actually worth taking.

Investors will wonder whether there are opportunities to invest in US offshore wind and, if there are, whether the risks are worth taking.

It is not just Cape Wind that has suffered in 2015. US utility Dominion Virginia Power has put a planned 12MW pilot project on hold because of high anticipated construction costs; developer Fishermen's Energy is struggling to get consent for a 25MW project off the coast of Atlantic City; and two of four sites in a recent offshore lease auction attracted no bids.

In fact, the only bright spots this year have been progress on the 30MW Block Island; and the entry into the market of Danish utility Dong Energy, which has experience of building offshore wind farms in Europe. If US offshore is to take off then such experience is vital.

THE SINKING FLAGSHIP

Developer Cape Wind Associates, a subsidiary of Energy Management Inc., first proposed the Cape Wind project in 2001 and it has been battling against wealthy objectors ever since.

Chief among Cape Wind's opponents is Bill Koch, who is one of the fossil fuel billionaire Koch brothers, and owns property on the nearby Cape Cod. He has been a major funder of the anti-Cape Wind lobbying group, the Alliance to Protect Nantucket Sound, which says the project would increase energy costs and harm businesses including local fishermen.

Despite the opposition of Koch and other wealthy objectors, Cape Wind appeared to be winning the battle. In March 2014, US courts ruled that the project could proceed after rejecting four lawsuits challenging the lease granted to the project by the US Department of the Interior. This was Cape Wind's seventeenth legal win.

It also had power purchase agreements in place with National Grid and Northeast Utilities subsidiary NStar, agreed in 2012, to buy 50% and 27.5% of energy gener-

"Cape Wind has enormous symbolic resonance. It is too important a project to let it go down without a fight.'

ated; and some serious financial backers. Bank of Tokyo Mitsubishi, Natixis and Rabobank were providing over $400m of commercial debt; PensionDanmark was providing $200m of mezzanine debt; and Danish export bank EKF had also made a $600m funding commitment.

However, Koch's strategy to "delay, delay, delay" the project with legal battles has proved fatal. In the first week of 2015, National Grid and NStar said they were pulling out of their power purchase deals because Cape Wind had not reached financial close as planned by 31 December 2014. This is a direct result of the protracted legal disputes led by Koch.

Without these deals the developer is very unlikely to proceed because it wants guarantees that it would be able to sell energy from Cape Wind for a specific price.

This does not have to be the end of Cape Wind, though, and we do not expect Jim Gordon, founder of Energy Management Inc., to go down without a fight. We will surely see more legal battles, including from Cape Wind challenging National Grid and NStar's decisions.

Not going quietly: Save Cape Wind rally in Boston

Source: Peter Bowden via Flickr

There is also lobbying happening at a local level. Massachusetts group the Better Future Project, which lobbies on behalf of projects in the state that are intended to help climate change, has been petitioning Marcy Reed, president of National Grid in Massachusetts, to get the company to reconsider its decision to walk away from the power purchase deal. It hopes that getting National Grid to honour its 50% deal would mean Cape Wind could proceed.

A spokeswoman from the Better Future Project told *A Word About Wind*: "Cape Wind has enormous symbolic resonance. We know that other wind developers are looking to Cape Wind as a barometer of public support for offshore wind in general. Our feeling is that this is too important to let the project go down without a fight."

The organisation said it met with National Grid's Massachusetts team in March, and has also organised a rally in Boston, is running campaigns on Twitter, and is now contacting the firm's London-based chief executive Steve Holliday. National Grid has not commented, but there is no evidence it is set to reverse its decision to exit the power purchase deal.

Technically, Cape Wind is a good project, and it may still happen. But it is undoubtedly a blow for the US offshore wind sector that it has been, at best, further delayed as it draws attention to the fact that there are no projects of a similar scale close to being delivered. The first US offshore wind farm is now likely to be the 30MW pilot project Block Island.

The prospect of a US offshore wind sector with a host of operational projects that offer stable returns for major institutional investors is still a long way off. The opportunities for the next decade will mainly be for investors comfortable taking on development risk.

Opportunities in the next decade will mainly be for investors comfortable taking development risk.

WIDESPREAD UNCERTAINTY

The 30MW Block Island scheme by Deepwater Wind is the main project giving developers and investors hope that offshore wind farms will be a feature of the US offshore landscape in ten years' time. It reached financial close in March after securing $290m from backers including Societe Generale and KeyBank, and construction is due to start this summer.

Located off Rhode Island, this is a significant scheme, and it could lead to a huge project of up to 1GW, but on its own it is not enough to support the growth of a US offshore wind supply chain.

And it looks increasingly likely that it will be a lone project. Alongside problems at Cape Wind, there are also troubles at one of the other most significant US offshore projects. In late April, utility Dominion Virginia Power put its planned 12MW pilot project off the coast of Virginia Beach in Virginia on hold for at least a year. The firm said the project to install two Alstom 6MW turbines 26 miles from shore would cost too much and expose it to big risks.

The main issue here is lack of construction experience. Dominion estimated last year that the scheme would cost around $230m to install, and started looking for bids from building companies. It said in April that it had received only one estimate, from a firm that said it would cost around $400m to install the pair of turbines. The estimate was also open-ended and this would expose Dominion to unlimited costs if the plans went awry.

Construction firms in the US do not have experience with installing offshore wind turbines, and this shows they also do not have the same confidence as European counterparts to assess or price the risks.

The scheme was due to complete in 2017, but has now been pushed back to 2018 at the earliest. Dominion is looking for ways to reduce the cost of the project before it seeks approval from the Department of the Interior's Bureau of Ocean Energy Management, which is a process the utility was hoping to push on with this summer.

And there is trouble too for the proposed 25MW pilot project by Fishermen's Energy off the coast of Atlantic City in New Jersey, where the developer is appealing against a refusal of the project by the New Jersey Board of Public Utilities. The project has faced five years of legal battles and, during that time, political support has ebbed away from offshore wind.

Powerful opponent: Bill Koch has fought Cape Wind

Source: Peter Stevens by Flickr

"Some forward-thinking companies are looking for good places to take their expertise and capital. The US certainly should be high on that list."

Back in 2010, Republican governor Chris Christie pledged to make New Jersey a wind energy superpower and gave his support to offshore wind. Since then he has courted wealthy donors, including the anti-wind Koch brothers, over a potential presidential campaign. This has coincided with Christie stopping talking about the potential for offshore wind in the region.

This is not the only challenge for Fishermen's, which also relies on federal subsidies that may not be forthcoming.

Between them, these three projects highlight a host of problems facing US offshore. The power purchase deals and legal battles de-railing Cape Wind; the lack of a supply chain and experience hitting Dominion Virginia; and political questions surrounding Fishermen's.

On top of this you can add the uncertainty over the future of the investment tax credit for offshore renewable energy projects. This incentive for renewables expired at the end of 2013 along with the wind production tax credit and, while they were eventually extended last year, this only took the incentive up to the end of 2014. It has now expired again and, with Republicans now in control of the US Senate, an extension of either looks unlikely.

In fact, one of the few areas where we have not seen problems is with financial support. There are investors with the resources and appetite to invest in projects. The problem has been getting projects to the stage where they are investable.

Doug Pfeister, a director with the Renewables Consulting Group in New York, says investors are interested: "My sense is that with the UK market reaching a level of maturity, and levelized costs there on track to reach £100/MWh by 2020 after huge investment decisions and construction on a unprecedented scale, some forward-thinking companies are looking for good places to take their expertise and capital. The US certainly should be high on that list," he says.

He adds that European developers, including the investors that back them, would want to get involved early — by establishing partnerships, buying leases, and teaming up with local experts — so they could start to gain a foothold.

FUTURE OF US OFFSHORE

Indeed, we are seeing firms in European offshore making moves into the US.

For instance, in February the Bureau of Ocean Energy Management held a disappointing auction of leases of sites of the coast of Massachusetts, of which only two of four sites attracted bids. BOEM agreed to lease two of the sites to RES Offshore and OffshoreMW at prices of $281,285 and $166,886 respectively. By comparison, Deepwater paid $3.8m for the 1GW Rhode Island zone in which it is currently pushing on with its Block Island project.

RES Offshore is part of the RES Group that is working on offshore wind farms in Europe, including the 580MW Race Bank and 270MW Lincs; and OffshoreMW is a US affiliate of German offshore developer WindMW, which is building the 288MW Meerwind Sud/Ost in the German North Sea. The auction may have been disappointing, but the positive aspect is that it has shown that developers with offshore experience are looking at the US.

After this, in April, Danish utility Dong Energy agreed to take over development rights in the RES zone. The addition of this European player has attracted excitement.

There is no doubt that the US has great potential and passion for offshore wind. But these do not equate with hefty returns for investors.

Dong has significant offshore wind interests, including a 25% stake in the world's largest offshore wind farm London Array, and a 25% stake in the Lincs schemes, operated by Centrica. It is also working on the Anholt scheme in Danish waters, Borkum Riffgrund 1 in German waters.

Dong executive vice president Samuel Leupold called the US an "interesting new market for offshore wind with the potential to become a significant area for future development".

The presence of Dong in the US is interesting as the company is good at identifying new opportunities and taking advantage of them. Even so, it does not have a shortcut to make schemes happen. It would take many years to turn its interest in the US into a feasible project.

What this does is give the US offshore sector a reality check. This is still a nascent sector, and a dose of realism from established players like Dong will serve it well.

We are still a long way off having an established offshore wind sector in the US, and investors should not go into the US expecting big returns in the next five years.

There is no doubt that there is great potential in the US and plenty of individuals with great commitment and passion to offshore wind. But potential and passion do not equate with hefty returns for investors. Only new projects can do that.

Very few investors will be prepared to wait another 14 years. ■

KEY DATES

Here are the key dates for our programme of regular events and reports. For further details, you can contact our team.

Events

18th June	Quarterly Drinks Q2
10th September	Quarterly Drinks Q3
22nd October	Annual Conference
5th November	Quarterly Drinks Q4

Reports

September	Eurozone Focus Report
November	Top 100 Power People
January	Finance 2016

A WORD ABOUT WIND