Offshore Wind in Asia
Recent Developments and Future Opportunities
June 2020
Key recent developments

1. Offshore wind has been identified as the technology that may attract the most new investment in Asia over the next 5 years, with 30% of surveyed senior business leaders from across the Asia-Pacific confirming that they are currently utilising or investing in, or have decided to invest in, offshore wind.

2. In Japan, public consultation in respect of the first designated Promotion Area (Nagasaki Goto City) closed on 23 May, with publication of the final auction conditions for Japan’s first general waters offshore wind zone auction anticipated in June 2020.

3. In further developments from Japan, recently published draft opinions of local council suggest that Yurihonjo and Noshiro-Mitane-Oga will shortly be officially designated as Promotion Areas, as early as the summer of 2020. Financial close of the first large-scale commercial operation offshore wind farm in Japan was also achieved in early 2020.

4. Taiwan has recently set a new feed-in-tariff for 20-year offshore wind Power Purchase Agreements signed in 2020. Rates have dropped by as much as 7.64% compared to 2019 prices.

5. Vietnam’s Ministry of Industry and Trade has proposed to the country’s central government to extend the deadline for its feed-in-tariff scheme by two years, from November 2021 to the end of 2023. If central government accepts this proposal, such extension would go some way to addressing concerns that development of the emerging industry in Vietnam may stagnate post-expiry of the current feed-in-tariff regime in November 2021.

6. The long term effect of COVID-19 is difficult to ascertain at this point with certainty. In the short to mid-term initial evidence and commentary suggest that projects which had, or were about to mobilise offshore activities have managed to progress more or less in-line with original schedules, or are confident that any slippage from factory closures (for example) can be recovered. The position is less clear for projects at an earlier stage, where key components are at manufacturing stage, or where key policy decisions from relevant authorities have been delayed due to the pandemic. The risk of material delay related to COVID-19 for such projects is considered to be higher.

Which new renewable power generation sources are you considering to utilise or invest in over the next 5 years?

2. Responses from the Asia Pacific senior business leaders surveyed as part of the Ashurst’s report: “Powering Change: Energy in Transition”, May 2020
Offshore wind and the energy transition in Asia

The evidence that the offshore wind industry is gaining momentum in the race for energy transition in Asia is now overwhelming.

Total investment
In a recent survey conducted by Ashurst¹, government pressure to invest in low-carbon power was identified as being the highest in Asia. In the same survey, 73% of respondent senior business leaders in Asia-Pacific stated their business strategies have changed in the last 12 months in response to the energy transition, with 32% stating that they are considering investing in offshore wind over the next 5 years. Offshore wind is evidently set to play a fundamental role in the energy transition in Asia, bringing with it substantial investment opportunities (beyond that previously seen in the European market) if ambitious government offshore wind targets are to be met.

Legislative framework
The development and passing into law of specific legislative frameworks for the development of offshore wind, and the adoption of ambitious installed capacity targets, evidence a real focus of particular countries to turn offshore wind into a key energy source for Asia, and these have been key factors in the early success of offshore wind development in the region. However, in implementing the applicable support regimes, governments have struggled at times to achieve the delicate balance between encouraging cost reduction whilst providing an adequate level of support for developers as new supply chains are developed. The struggle associated with this delicate balancing act is expected to continue across the continent as the industry develops at differing pace in different countries.

Floating wind
Floating foundation wind turbines have a crucial role to play in the energy transition of Asia if various renewable energy targets set by governments are to be met. For countries where the continental shelf drops off into the open ocean quickly, and for countries which contend with major weather phenomena as well as earthquakes, floating wind must surely form a key piece of the renewable energy strategy. The industry is developing at a quick pace, with multiple demonstrator projects now displaying the viability and increasing appetite of the offshore market for the commercialisation of floating wind. The entrance of major players into the market such as Iberdrola and ScottishPower, Equinor, Shell, and MHI Vestas is taking the industry onto the next level in terms of investment. This, together with the increasing knowledge and experience being gained from demonstrator projects, is bringing the reality of large scale floating offshore wind ever closer.

International players and local partnerships
Attractive tariffs, improved design, increased knowledge of local conditions, and improving policy environments have all played their part in attracting major international developers, as well as key contractors, to the Asian offshore wind market. The presence now in the region of market leading international developers evidence the momentum that is now with the industry in Asia, and with market leading floating wind technology providers also now present in Asia, it is clear that the industry is on a strong upwards trajectory. The numerous partnerships that have also been agreed between international developers and regional utilities and developers has resulted in a combination of serious financial power, knowhow, and local influence that will likely see the industry go from strength to strength over the next decade and beyond.

Opportunity
Whilst growth in Asia will continue to depend on the legislative frameworks and support regimes the relevant governments put in place and develop, the potential of approximately 100 GW of offshore wind capacity in Asia by 2030 will clearly bring with it ample opportunities for industry participants who are willing to be flexible and innovative in the context of overcoming the challenges that can go hand in hand with investing in nascent markets.

¹ Ashurst’s report: “Powering Change: Energy in Transition”, May 2020

[Image: offshore wind turbines and turbines]

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By 2030, the Asian offshore wind market is expected to have installed approximately 100 GW of offshore wind capacity. Mainland China and Taiwan are market leaders in Asia, with the Japanese market now also gathering momentum. Vietnam and South Korea are also key markets to watch as the policy environment matures.

Mainland China
Mainland China currently has installed offshore wind capacity of 6.8 GW, which is third largest in the world behind the UK and Germany. Mainland China achieved a new record in 2019 by installing more than 2.3 GW of offshore wind capacity in a single year (39% of 2019 global total). Mainland China may have the world’s largest offshore wind fleet by 2022. Recent investment by GE and EDF evidences opportunities for foreign investment also exist in the Chinese market, although a full opening up of the Chinese offshore wind industry would appear to be someway off.

South Korea
South Korea is a market that is expected to follow Taiwan and Japan in terms of its development of offshore wind capacity. The government has confirmed an ambitious renewable energy target under its 3020 Plan, and has set a higher target than that of the Japan Wind Power Association in terms of installed offshore wind capacity by 2030 (12 GW as opposed to 10 GW). The pipeline of potential projects in South Korea is significant as a result, attracting multiple international developers. With an increasing number of projects in early-stage development, the South Korean market is one to watch closely as policy and local supply chain experience matures.

Japan
The creation of a more positive regulatory environment has drawn the attention of large local utilities and global players. Estimates suggest that Japan has 91 GW of fixed foundation potential, with a 10 GW installed offshore wind capacity target by 2030 target suggested by the Japan Wind Power Association, bringing with it an estimated investment value of USD 46.5 billion. 4 GW of this target is anticipated to be delivered by floating foundation wind turbine generators.

Taiwan
The Taiwan offshore wind market is one of the fastest growing in Asia. 5.5 GW of installation is targeted by 2025, with a plan to then add 1 GW of capacity annually from 2026 to 2035. The rate of continued growth in Taiwan suggests that (with a bit of persuasion from key industry participants) it has been getting its tariff placement about right, and it will be interesting to see how the market reacts to the latest reduction announced earlier this year.

Philippines
According to the World Bank, the Philippines has 178 GW of offshore wind potential, noting that 160 GW of this is attributable to floating wind. Alongside Japan, the Philippines is therefore another example of a country that stands to benefit hugely from the development of the floating offshore wind industry. The recent contract awarded by the government to Trionti Windkraft Group for the potential development of up to 12 GW of offshore wind projects displays the intent of the Philippines to take advantage of its offshore wind capacity.

Vietnam
With a coastline of more than 3,000 km and wind speeds of 8-9 m/s, 475 GW of offshore wind capacity has been identified, with up to 214 GW of this capacity potentially being provided by floating offshore wind. With an estimated 99 MW of installed intertidal projects already, Vietnam has had initial encouraging success in the development of the industry. Confirmation by the government that the existing tariff will be extended by two years following expiry of the existing tariff in November 2021 will hopefully be forthcoming. Such government support will be crucial in building upon Vietnam’s initial success in the industry.

India
India plans to have an operational offshore wind energy capacity of 5 GW by 2022 and 30 GW by 2030. Whilst political will exists these targets are widely considered to be overly ambitious. Current low prices for onshore wind and solar may also bring into question the attractiveness of offshore wind development in the short to mid-term. However, interest in Indian offshore wind is certainly present, with 35% of respondents from India in our “Powering Change – Energy in Transition Report” confirming that they are looking to invest in offshore wind, and 44% within the next 3 years.

Based on the Global Wind Energy Council’s Global Wind Report 2019
Drivers

There is a mix of domestic and global factors supporting this increasing growth of the offshore wind industry in Asia.

1. **Renewable energy targets**
   The wide adoption of national renewable energy targets by Asian countries evidence to key international players and financiers the region’s ambition to transition to renewable energy, and provides a clear signal that the region is open for renewable business.

2. **Government support**
   An increasing number of governments have now backed up these renewable energy targets with regulatory frameworks and balanced support mechanisms which has resulted in early success in driving up investment and the growth of the offshore wind industry in Asia at an appropriate level of cost.

3. **Increased understanding and technology development**
   Increased understanding of previously unknown seabed conditions, and resultant improvements and development of technology and design (including in relation to turbine size and natural disaster resistance) have opened up areas for development that were previously considered to be unreachable, impracticable, or not cost efficient to bring to pass. The potential afforded by floating wind development is also considered to be a key attraction for offshore wind investment in Asia.

4. **Development of supply chains**
   Key players in particular regions in Asia have invested in offshore wind projects in Europe over the past few years, enabling them to bring vital knowhow back to their respective countries. This, together with an increasing trend of international players partnering up with local developers and technology providers, has resulted in effective problem solving and efficient project development in Asia, particularly in respect of the development of the supply chain. This approach will surely remain crucial to the development of the emerging offshore wind industry in the region for the foreseeable future.

5. **Domestic factors**
   Specific domestic factors have also contributed to the focus on the offshore wind industry in Asia, with perhaps the best example being that of Japan, where the shift away from nuclear for well documented reasons has resulted in a renewed focus on how it can become more energy dependent. Renewable energy (particularly offshore wind and solar) has been a clear benefactor of this shift in domestic energy policy.
Challenges

Whilst each country will have its own particular pressure points and unique challenges to overcome, there are common themes that can be drawn out when looking at the challenges that industry participants and government authorities must overcome in order to build upon the early success in the region, including:

1. **Government policy**
   Periodic reviews of government schemes have been crucial in ensuring that tariff rates or auction caps (if any) are set at appropriate levels to promote development of the industry whilst keeping the cost of the development at a balanced level for all stakeholders. Cut the tariff too soon and the government may end up paying over the odds for the development of the industry and its supply chain. Taiwan has previously almost been caught on the wrong side of this delicate balancing act before arriving at a price point that was ultimately acceptable to all stakeholders.

2. **Grid capacity and transmission**
   Particular countries have to address the issue of their most abundant offshore wind resources being sometimes in regions that are sparsely populated areas. Transmitting the energy generated in such areas to the population centres hundreds of kilometres away may introduce capacity, integration and distribution challenges. Any government faced with this challenge must ensure that its policy agenda expressly addresses its grid infrastructure investment strategy.

3. **Vessel availability and cabotage**
   A regular appearance on lists of this nature, Asia is no exception to the challenges presented by a lack of vessel availability. In fact, the issue is more acute in Asia as the limited number of installation vessels are almost exclusively from Europe, and cabotage type regulations in Asia are common. Whilst new vessels are being built by owners including Deme Group and Jan De Nul Group, there is a reluctance amongst vessel owners to over-commit to the construction of new vessels at this point in time given that manufacturers are designing blades of ever increasing size which will of course require bigger installation vessels. Locking in the relevant vessels at the earliest feasible point in the development of a project is now more crucial than ever.

4. **Port capacity and location**
   Port capacity and location is a common challenge that must be overcome in the development of offshore wind in Asia. Relevant port facilities will need to be upgraded in many countries in order to ensure that the ports which will be used for the development and maintenance of wind farms are capable of handling the vessels and heavy loads that accompany the construction of an offshore wind farm (on top of its existing obligations).

5. **Topography and major weather phenomena**
   The knowledge of seabed conditions surrounding particular areas of Asia is not as extensive as other regions such as northern Europe, which has benefited from decades of geological studies driven by oil and gas exploration. Whilst the risks associated with (for example) soil liquefaction, sand waves, typhoons, and earthquakes can be mitigated by appropriate construction methods, this inevitably brings with it additional cost and time implications due to the complexity of the required design and engineering solutions.

6. **Co-ordination with local stakeholders**
   Ranging from the powerful fishery lobbying groups who need to be comfortable with the location and effect of the wind farm, to local landowners whose consent is required for grid connection related development, to local shipowners who object to foreign developers contracting foreign flagged vessels, the need to promote collaboration and harmony between the developer, contractors, and local stakeholders is a critical challenge to overcome. Early engagement and open dialogue is fundamental to the successful resolution of the issues at hand for the respective parties.

7. **COVID-19**
   It would be remiss in the current climate to not mention the effect that COVID-19 is having and may have on the offshore wind industry in the future. Clearly this is a complicated topic (beyond the scope of this briefing), but early indications suggest that whilst the pandemic may slow down development of projects at particular stages, with a potential short to mid-term adverse effect on the achievement of installed capacity targets, generally the industry is well placed to get back on track following the containment of the pandemic. Early estimates from the Global Wind Energy Council suggest that up to 15% of planned global installed capacity could be delayed to 2021 due to COVID-19 (equating to 11 GW). However, the fundamental drivers of the offshore wind industry in Asia (and across the globe) remain strong, and we consider that whilst the pandemic may indeed reduce the speed at which capacity can be installed over the next 12-18 months or so, ultimately the industry will continue to grow and attract significant investment opportunities.
We expect that in Asia offshore wind will be the technology that attracts the most new investment over the next five years, and government pressure to invest in low carbon will turn Asia into a global leader in offshore wind power generation. It has been estimated that the Asian offshore wind market will install approximately 100 out of the 190 GW of offshore wind capacity that is estimated to be installed globally by 2030, which demonstrates the fundamental role that Asia will play in the offshore wind market over the next decade and beyond.

The trend of more experienced European developers partnering with local institutions and utilities is expected to continue, and how this European expertise is applied to the unique challenges of the domestic market will be crucial to the long-term success of the offshore wind industry in Asia. **Mainland China** is expected to remain dominant in terms of installed capacity, and it will be interesting to see if the domestic market shows any further signs of opening up to international investment following the successful recent moves by EDF and GE in the country. **Taiwan** is expected to remain a market leader in terms of attracting international investment, with **Japan** set to follow hot on its heels following the fixed bottom offshore wind auctions to be held later this year. **South Korea** and **Vietnam** will also likely become key players in the region as the policy environment matures.

We expect to see governments continue to push hard for a reduction in cost at early stages of the development of the industry, as evidenced by Taiwan’s move in 2018 to reduce its feed-in-tariff by as much as 12.7% (although the reduction was later reduced to 6% following feedback from key industry participants in the region). Taiwan has continued to reduce its feed-in-tariff on an annual basis, and we expect to see the trend of a reduction in government support to be reflected across the region as the industry develops and governments look to strike an appropriate balance between encouraging cost reductions while still providing a sensible level of support for new developments. Vessel availability will likely come under increasing pressure and will become (if it is not already) a key risk consideration for developers in Asia as vessel owners delay strategy decisions on the deployment of existing vessels and the construction of new vessels in order to take into account both the ever-increasing size of turbines being designed and also the geographical location of the emerging markets that are developing at fast rates across the globe. The floating offshore wind turbine industry is expected to play a crucial role in the energy transition in Asia, and it is anticipated that floating offshore wind farms will be possible on a commercial scale over the coming years.

**Government economic stimulus packages in response to the COVID-19 pandemic** may facilitate significant investment in the renewable industry that might not have otherwise have manifested on such scale at this point. Although it is also possible that governments could go the other way and decide that available funds should be deployed in areas other than renewable energy subsidy schemes, the support for which may vary dependent on the political climate of the country in question. Industry participants will no doubt be keenly monitoring such policy moves by governments which may trigger investment opportunities, or indeed a change of focus to a different region, at an earlier stage than previously anticipated.

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1 Global Wind Energy Council’s Global Wind Report 2019
Powering Change: Energy in Transition

Facing rising demand and a drive towards decarbonisation, the global energy industry is in a state of transition. As a leading international law firm with specialist expertise in the energy industry, Ashurst is the ideal strategic partner to support industry participants in navigating this shifting landscape. Delving into the current state of the market, pace of change and areas of future opportunity, we were delighted to recently publish our report, entitled "Powering Change: Energy in Transition".

Through our quantitative research, which polled the views of more than 2,000 senior business leaders from across the G20, our respondents reported immense change: rapid and increasing shifts in their investment patterns, moving away from conventional energy generation towards renewable energy and decarbonisation technologies.