Offshore wind supply chain in the UK:
ambitions and challenges for CfD AR4 and beyond

In July 2021 the UK government published updated requirements for the Supply Chain Plan element of Contracts for Difference (CfD) Auction Round 4 (AR4). Kerri Hart, senior technical advisor at Natural Power, presents the background, changes and purpose of these changes.

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The Natural Power team has supported a number of projects in preparing for CfD auctions and expects to do so for AR4. Natural Power's experience working from initial site identification through to operations and maintenance; our extensive team of in-house experts; and our position supporting the development of renewable energy generation in the UK for over 25 years places us in an extremely strong position to support this activity.

In this white paper, we explore the current requirements for supply chain under the CfD AR4 regime and share insights into key challenges for developers to consider.

THE IMPORTANCE OF A RELIABLE SUPPLY CHAIN IN OFFSHORE WIND

The UK government plans to grow UK offshore wind generation to 40 GW by 2030, meaning that offshore wind would have the potential to power every home in the UK. Offshore wind is currently one of the fastest growing markets across the globe and having a robust and reliable supply chain is of great importance to enable the expansion of this sector.

With a rapidly growing number of large-scale projects looking to source turbines from a small number of manufacturers, there is growing pressure on the industry to ensure the supply chain has the capacity to support the demand and future growth of the sector.

For example, key players such as Siemens Gamesa Renewable Energy, GE and Vestas dominate the offshore wind turbine market, and each one has introduced offshore turbines rated as high as 15 MW to their product line between 2020 and 2021.

This article focuses on providing insights into the local UK supply chain for the offshore wind sector; the challenges facing developers and investors when considering local content alongside the wider market; and what role the upcoming UK government backed Contract for Difference (CfD) auctions will have for enhancing local supply chains and creating new jobs in the UK.

UK OFFSHORE WIND SUPPLY CHAIN: STATUS AND FUTURE GROWTH

The UK, being an island nation with a strong wind resource, is ideally situated as a leader in offshore wind energy. As such, the UK has one of the highest operational capacity of offshore wind farms (over 10 GW) in the world, along with China (which has the highest) and Germany. This has attracted major offshore wind developers to the UK and, in turn, this has helped to drive forward the growth of the UK supply chain.

Manufacturing facilities exist all across the UK providing a range of offshore products such as array and export cables, wind turbine components, and installation and service vessels. The following two case studies help illustrate the continued and future growth of the UK offshore supply chain.

Case study – Hull

One of the most significant investments in the UK supply chain was seen in Hull's Alexandra Dock with the completion of an offshore wind turbine blade production and installation facility in 2017. The £310million Siemens Gamesa Renewable Energy facility currently employs over 1,000 people. Following an investment of £186m, the blade manufacturing facility is to be doubled in size to allow for the manufacture of larger blades, and the upgrade is planned to be completed in 2023. The facility initially produced blades that were 75 m in length. With the latest product offerings having blades over 100 m, an upgrade to the plant will bring significant benefits to the UK economy, including the creation of over 200 new jobs.

Hornsea Two, the world's largest offshore wind farm, will comprise 165 Siemens Gamesa 8.0-167 DD turbines in which the majority of the blades will be manufactured at Siemens' facility in Hull. Hornsea Two, which is being developed by Ørsted, is on track to be completed next year and will

provide enough clean electricity to power more than 5.5 million homes. According to Ørsted, it has invested over £10billlion over the past 10 years constructing its UK offshore wind farms. This has significantly boosted local economies through the creation of high-skilled jobs, local facilities, and competitive, export-orientated local supply chains.

Case study – Forth Ports

On 25 May 2021, Forth Ports announced ambitious proposals for the creation of Scotland's largest renewable energy hub on a 175-acre site at the Port of Leith.[1] This investment (estimated at £40m) is said to have the potential to provide up to 1,000 longer-term jobs and around 2,000 indirect jobs, and it would directly enhance the supply chain and manufacturing capabilities of the UK. The total area of the facility would be the equivalent to around 100 full-sized football pitches. The location is also ideal in relation to the planned developments in the North Sea and future pipeline projects which will further enable the UK to increase its share of local content.

UK OFFSHORE WIND SECTOR DEAL

Enhancing the UK supply chain is not only the by-product of investment from key industry players looking to expand their markets and portfolios, but it is also the responsibility of the government to push forward the UK's renewable energy targets. As part of the UK government's Industrial Strategy, the Offshore Wind Sector Deal was created in 2019 to drive forward the transformation of offshore wind generation to enable it to be part of a low cost, low-carbon grid system and boost the productivity and competitiveness of the UK supply chain.[2]

As part of the Sector Deal, the UK government has committed to providing £557 million for the future CfD auctions and policy support for offshore wind. We discuss the importance of the CfD auctions and their role in supporting the supply chain in the following section.

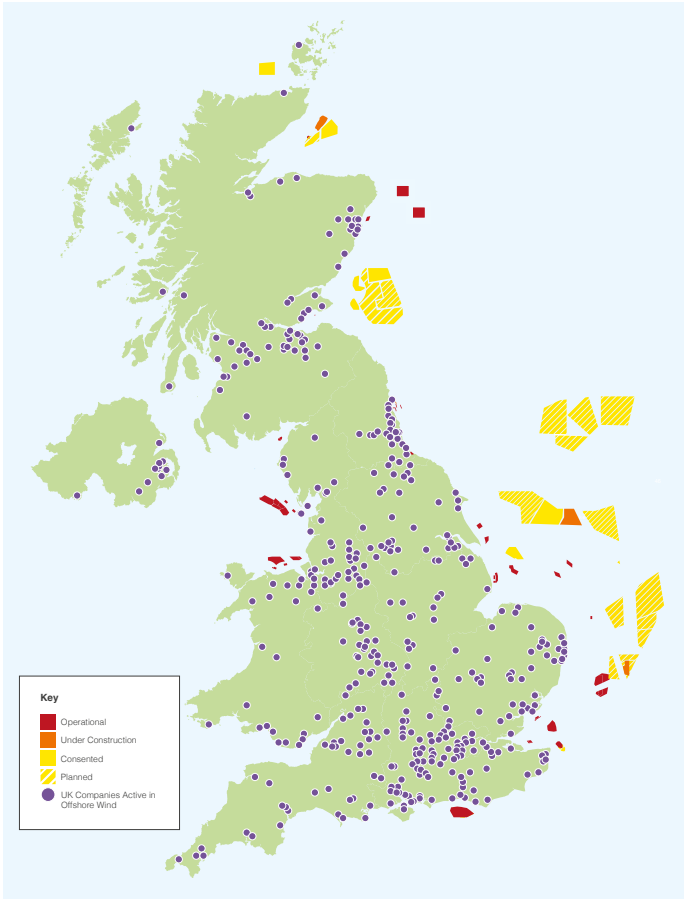

Figure 1 above shows an illustration of companies across the UK that are active in the offshore wind supply chain.
(Source: "Industrial Strategy: Offshore Wind Sector Deal", HM Government, 2019)

CFD AND SUPPLY CHAIN PLAN

The Contract for Difference (CfD) is the main support mechanism from the UK government for the promotion and growth of a low-carbon energy sector. It is a contract between a generator and the Low Carbon Contracts Company (LCCC) to provide a project with a stable income, while protecting consumers from paying increased costs when electricity prices are high. For a project with a generation capacity of over 300 MW, to qualify for CfD, an approved Supply Chain Plan (SCP) must be provided to the National Grid.

In May 2021 the UK government provided a response to a consultation of the changes to Supply Chain Plans and the CfD contract[3] for applicants wishing to enter a CfD allocation round for projects of 300 MW and above. The response included a decision to implement its proposal for an Operational Condition Precedent (OCP) with the potential consequence of contract termination if a generator failed to provide a Supply Chain Implementation Report certificate.

1 https://www.forthports.co.uk/latest-news/ambitious-renewable-energy-hub-plans-unveiled-for-the-port-of-leith/

2 "Industrial Strategy: Offshore Wind Sector Deal", HM Government, 2019.

3 "Contracts for Difference for Low Carbon Electricity Generation: Government response to consultation of the changes to Supply Chain Plans and the CfD contract", Department for Business, Energy & Industrial Strategy, May 2021.

Additionally, the assessment of a developer's delivery of its supply chain commitments will be brought forward to shortly after a project's Milestone Delivery Date (MDD) rather than at project commissioning as previously suggested.

Developers must prove they will fulfil the obligations of the CfD by MDD and this includes the supply chain assessment, which is required shortly after. Therefore, the risk of having a CfD withdrawn due to a supply chain plan that fails to pass the criteria at the point in which the project is operational is reduced. This consistency in government approach will bring significant comfort to developers looking to take part in future CfD auctions in the UK.

Natural Power has direct experience of supporting and negotiating onshore and offshore wind component and service provider contracts. In our view, this approach to local content is a positive step, as it creates a degree of certainty for early stages of development and facilitates early stage commitments as part of the planning process.

SUPPLY CHAIN PLAN FOR AR4

In previous CfD auctions, Natural Power has worked alongside developers in developing and writing SCPs. The Department for Business, Energy & Industrial Strategy (BEIS) provided the most recent publication of the SCP and questionnaire on 7 July 2021. The supply chain plan questionnaire assessment for allocation round four (AR4) is based on four sections. These are:

- green growth
- infrastructure
- innovation
- skills.

Each section is worth 500 points, and applicants that achieve a score of less than 50% in any of the sections are unlikely to pass.

The following sections provide some further details and examples of the four main criteria for SCPs.

Green Growth

The Green Growth criteria relate to reaching net zero and the contribution to levelling up the UK economy by strengthening supply chains through impactful investments that expand capability and capacity, but also embed sustainable business practices. The approach to procurement should also promote a diversified and confident supply chain with a willingness to award contracts to new entrants. This will help build confidence in the wider supply chain.

The initial push for local content as part of the third auction round was focused on promoting competition and cost reduction. For example, a published SCP for the Seagreen Project from CfD AR3 included deploying a multi-contract procurement strategy to promote competition across five key work packages (WTG supply and installation, marine installation, electrical system infrastructure, O&M and ports) with an aim to secure in 4 to 10 contracts. It was confirmed in June 2020 that 87% of the blades for Seagreen are to be produced in the UK, and Northern Marine Services (Scotland) Ltd, based in Wick, has been appointed to support the delivery and installation of the foundations from the Port of Nigg. Other local key contractors were also acquired for the project. This provided a positive example for the importance of well-established SCPs and highlighted the achievability of securing local content for major offshore wind farm developments.

The changes in the SCP criteria for AR4 will help build on the foundations that have been established in previous rounds and will encourage new players into the supply chain as the scoring process carries a significant portion of points for promoting new entrants (20% of the points in the Green Growth category). This supports the Just Transition principles,[4] most notably by creating "opportunities to develop resource efficient and sustainable economic approaches".

Innovation

The Innovation criteria are based on innovative technologies, ideas and process that can reduce the cost of projects and overcoming technical challenges. It is important to demonstrate long-term stability and resilience of the supply chain while assigning sufficient resources to R&D, with specific consideration for small and medium enterprises (SMEs), in the development of innovative and next-generation technology and techniques, with a willingness to be a first mover in trialling these in projects. This is a positive step in enabling new businesses to expand their reach into the offshore wind sector and provide the next generation of technology and experts that might not have been able to compete with more established players.

The AR3 SCP criteria for innovation had a key focus on reducing levelized cost of electricity and providing faster and more efficient methods for installation and other processes.

With an aim so focused on reducing costs and increasing efficiency, many new entrants to the market would have struggled to demonstrate this requirement as part of AR3. This is a key element of the new SCP requirements and reflects the ambition of the wider industry.

Infrastructure

Investment in related and supporting industries forms one of the tenets of Porter's Diamond, the measure of competitiveness of a potential market. This element of the SCP is aimed at increasing investment in infrastructure and increasing the capabilities and competitiveness of local supply chains to drive down costs and risks. This category was not

4 https://www.gov.scot/groups/just-transition-commission/

part of the previous AR3 SCP criteria and, as such, is an important addition to ensure proposed projects will have the necessary supporting infrastructure in place to be delivered successfully.

This is of particular importance when considering floating offshore wind, which is identified as a Pot 2 technology in CfD AR4[5] for which several projects are expected to apply. For example, port infrastructure required for assembly during construction and ongoing maintenance of a floating offshore windfarm differs from the established infrastructure required for bottom fixed offshore wind. Encouraging the upgrading of ports to accommodate large-scale deployment of floating offshore wind will need to have long-term incentives beyond construction phases to be attractive to investors, with new and innovative approaches required to meet the industry demand. Port of Cromarty Firth signed a Letter of Intent to partner with a French floating foundations company for the use of its land and berthing sites as well as establishing a concrete hull serial manufacturing yard for incoming floating wind tenders. Such partnerships will provide increased confidence in the capabilities of UK ports in the expansion of offshore wind.

Skills

Again, in accordance with the Just Transition principles, this category is aimed at ensuring that a skilled workforce and necessary training will be provided through the creation of long-term jobs and commitment to education and investment while also promoting diversity and inclusion. Having local outreach to schools and other education centres as well as providing apprenticeships will help promote long-term education and skills training, which will ultimately support individuals in the sector. Over half of the available points in this category are awarded for providing jobs and opportunities for apprenticeships, trainees and scholarships.

Timetable and process for CfD allocation round 4:

- Supply Chain Plan application window: 27 September–3 October 2021.
- CfD application window: 13 December 2021–14 January 2022.*
- Sealed bid window: 9–29 March 2022 (shortest timeline) or 24 May–15 June 2022 (longest timeline).
- CfD notification to successful applicants: 22–25 April 2022 (shortest timeline) or 7–8 July 2022 (longest timeline).

*The government has extended the time for CfD applications as the window falls over the festive holiday period.

CONCLUSION

With the deadlines for CfD allocation round 4 rapidly approaching, the push for demonstrating commitment to local content and the net zero target is critical for players looking to secure CfD on upcoming projects. The UK has already seen impressive growth in its local supply chain over the past several years and has set ambitious targets to continue to pave the way as a global leader in offshore wind.

Natural Power's experience in supporting development and construction of offshore wind and our thorough understanding of the UK renewable energy market and supply chain places us in a strong position to support the preparation of Supply Chain Plans for the upcoming CfD Auction.

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5 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937634/cfd-proposed-amendments-scheme-2020-ar4-government-response.pdf