Norfolk Vanguard and Norfolk Boreas Offshore Wind Supply Chain: Opportunities and Expectations Workshop Report

20th November 2019
Energy Skills Centre, East Coast College,
Lowestoft Campus, Rotterdam Road,
Lowestoft, NR32 2PJ

VATTENFALL

Front cover image: Vattenfall's Sandback 288 MW offshore wind farm

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Meeting Summary

Enhanced collaboration and proactive stakeholder engagement can enable enhanced local content in the new generation of offshore wind farms

Vattenfall has conducted a number of supply chain meetings with UK companies since 2018 in relation to Norfolk Vanguard, Norfolk Boreas and Thanet Extension, our UK pipeline of projects. One-to-one meetings, "meet-the-buyer" sessions, and workshops bringing hundreds of stakeholders together enable a broad and deep exploration of opportunities and challenges currently faced by the offshore wind sector.

The emerging understanding is:

- There is a collective desire to deliver innovative, efficient, sustainable advances in technology for the next generation of renewable energy generating projects, while also contributing to the goals of the Offshore Wind Sector Deal, UK industrial strategy and clean growth challenge.
- Both established and potential entrants to the supply chain would benefit from longer term planning and a better understanding of how the sector works as a whole, to boost preparations for winning, deliverable tenders.
- The Offshore Wind Sector Deal target of 60% UK content can be achieved by 2030 providing there is top-down and bottom-up commitment and action across the sector. For example, Government can stimulate a business environment conductive to long-term investment, developers can work together better and engage earlier, with a collaborative and more joined-up supply chain.

Vattenfall, acting as a facilitator, is attempting to address this feedback as far as possible, for example by initiating information-giving on potential opportunities very early, sharing our contract strategy, providing clarity on terms and conditions, and committing to open book procurement and facilitating sector wide collaboration.

The event described in this supply chain report sought to focus on specific programme limited opportunities – a function of procurement and construction being done project by project, rather than utilising a portfolio or bundling approaches to procurement. Globally-active Tier 1 companies are currently better able to manage the peaks and troughs of this system than more locally based SMEs.

For smaller manufacturers or those with ambitions to enter the sector to deliver what the Tier 1 companies (T1) require, engagement with T1 tends to be after developers are awarded Contracts for Difference (CfD) for their projects, and final investment decisions are taken. This can result in insufficient time for SMEs to meet T1 expectations.

Our purpose in convening this meeting was to introduce T1 companies to local (East Anglia and UK) SMEs with the potential and capacity to deliver some of their needs, and to hear directly about their capabilities. Similarly, in order to build effective collaboration, T2 and SMEs need to understand how T1s operate, their interests, needs and engagement timeline. Finally, all participants considered how it might be feasible to reach the target of 60% UK Content by 2030, as set by the Offshore Wind Sector Deal for 2030. A clear understanding emerged that developers cannot achieve that target singlehandedly. Rather, a more collaborative approach, which moves away from the recurrent cycle of 'bid, award and construct' is needed.

The meeting successfully achieved it's purpose, and we are grateful to participants for their contributions and involvement. Below we summarise messages / calls-to-action which emerged from the meeting, and which are aimed at key offshore wind stakeholder groups. The full meeting presentations and dialogue session outputs are in a separate appendices document, which can be found on the supply chain pages of our website: https://group.vattenfall.com/uk/what-we-do/our-projects/supply-chain.

Vattenfall encourages stakeholders to reflect on the messages delivered by meeting participants, and will facilitate ongoing dialogue, including via our LinkedIn supply chain group[1] .

[1] Vattenfall's LinkedIn supply chain group: https://www.linkedin.com/groups/8790643/

Key messages /asks to Government

Provide a better business environment for investment
Provide a clear framework and plan for the energy transition including:

- Encouraging collaboration / support to address / mitigate current and potential / future consenting barriers (e.g. radar, marine spatial planning, local onshore infrastructure, rural transport [road] network)
- Better clarity on pipeline of interconnectors, grid reinforcements / sector coupling
- Support development (and the Supply Chain) with annual CfD rounds
- Smooth the boom & bust cyclical nature of the sector to encourage sustainable long-term investment in the UK – encourage manufacturing companies to the UK
- Do not create / implement policies that counter delivery of binding C-reduction targets – encourage green growth & the supply chain
- Don't scrap CfD's – unless there is another means of encouraging / requiring local content

Encourage and monitor (and "police") local content

- Accept higher cost for more local content - cost pressure pushes manufacturing industry out of the UK/EU
- Consider ways to prove and measure UK content? Long term plan, supported by policing

More support for UK companies when working/selling overseas.

Support for and clarity on rules for microbusinesses and SMEs
e.g. IR35 and flexibility for project based employees/consultants

Invest in skills – there are global shortages of suitably skilled workers looming

- More design and tech courses
- Encourage more women into engineering
- Make climate change a core element of the curriculum. Not just to be green but to promote future career paths. Follow the science. Lead don't follow

Reflection from Vattenfall

Many of the points and asks here align with the aims of the Offshore Wind Sector Deal, showing real commitment and motivation on the part of all sector stakeholders to engage with the Offshore Wind Sector Deal, and Clean Growth challenge in the UK, and play their role in driving actions forward, implementing UK Government Policy. In turn, the sector calls for assistance to establish favourable conditions for investment. There is also a suggestion that more should be done to support local companies (i.e. in counties, and regions closest to / hosting offshore wind farm developments, rather than UK companies). Targeted, cluster development might help create complementary local hubs of expertise and manufacturing / supply.

Meet Joanna

We know that the climate smarter solutions of tomorrow will be shaped by the bright minds of today. Our journey to engage with Norfolk's future workforce is actively underway. This is University Technical College Norfolk (UTCN) student Joanna's story.

https://www.youtube.com/watch?v=aMsBh4Q4hKU&feature=youtu.be

Key messages / asks to Developers

Support / award framework agreements
We need to project approximately 1,000 foundations in order to build a UK facility

Take procurement decisions early & engage early
- Engage/commit early/ASAP, this will encourage investment, planning and innovation
- Gather preferred suppliers together to develop solutions collaboratively (HKZ approach)
- Clarify work packages and potential T1 suppliers
- Early engagement with local supply chain – local knowledge/logistics for delivering package of works
- Early engagement in design – bringing best practice/lessons learnt from previous HVDC projects
- Be more consultative and open to all stakeholders. Support onshore enterprise as well as offshore – for example around onshore project substation (furthest from coast, as well as at coast)

Standardise Codes of Practise, Skills & HSE requirements across markets

The supply chain would like more collaboration among developers e.g. one procurement portal for all developers

Why depend so much on T1's? They are not too big to fail. Expensive and bureaucratic

Reflection from Vattenfall

A wide range of views reflect the diverse characteristics of participants. For example the call for framework agreements, from a T1 supplier suggests there is aspiration to invest in significant manufacturing capacity in the UK.

Other suggestions go further, all developers should streamline procurement and work together to facilitate local investment. Others challenge developers to encourage greater collaboration among SMEs and to moderate the role of T1 companies.

Key asks to T1

We want to understand you better

- More transparency, and information-giving to enable SMEs to understand the interests, needs, motivations of T1 companies
- Greater engagement in a collaborative environment
- Share your T&Cs
- Hold similar events like this where T2 and SMEs etc. are invited

Help SMEs to work with you

- Contractual obligation for T1's to use local content but local content needs to be defined (East Anglia or UK)?
- Personnel breakdown in relation to local content will help to document and support a bid
- Share your skills plans for local labour with councils and training providers as well as local companies
- Be more flexible with suppliers. Contractual terms to be fair and reasonable. Aim for win/win claim free
- Develop an understanding of the 'hidden cost' of tendering. Frequently this risk is pushed to the party least able to bear it

There are currently no fabrication facilities in the region on a scale to be able to compete.

Will future developments actually require a CfD and if not will that mean that UK content targets disappear?

Reflection from Vattenfall

On the whole the comments here reflect a desire to engage more constructively and profitably with T1 companies, however, there is also some scepticism about the motivation of T1s to work with SMEs. Potentially, more dialogue can move parties towards win : win outcomes.

Our key ask of Local Suppliers
Is there a desire for suppliers to collaborate? Do not tick all boxes in tenders - must be able to provide proof! What is the trigger point at which you will feel confident to invest? E.g. in skills and training/new workforce. How will you engage with education/are you partnering with local companies, providing mentors, work experience, graduate schemes etc. How will you develop a training package to transfer oil and gas personnel to wind industry? Much of the supply chain not yet done this – there are opportunities here, probably more in O&M than construction. Buy survey vessels/autonomous vessels/recruit and train staff. Train grads to work offshore.

Reflection from Vattenfall

Across the industry we need to improve communication from the top down. There are many initiatives around partnering and skills but these are often confusing and lead by different Groups (OWIC/OWGP/ClustersOREC) etc.

Vattenfall will pass this message back at the highest level that we need clear routes into wind, and will continue to work with others collaboratively to develop pathways into the sector that enable entry at different points in individuals' careers.

Introduction

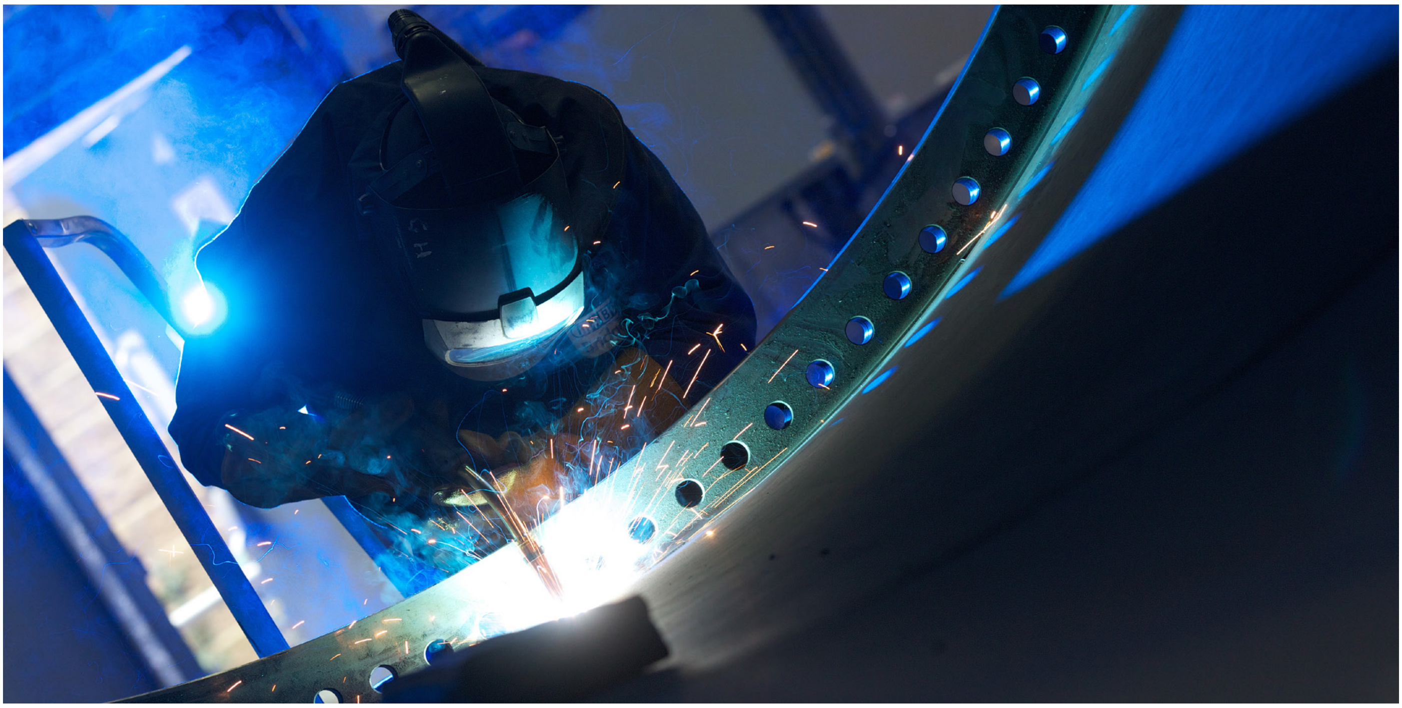
On 20th November 2019, participants from local agencies, Tier 1 companies and local SMEs joined Vattenfall at its supply chain workshop, held in conjunction with the East of England Energy Group's Offshore Wind Week East Anglia. The workshop was held at the Energy Skills Centre at East Coast College, and we'd like to thank all the staff involved in organising our hospitality for the day.

This report provides an overview of the workshop and captures the key discussion points raised by all parties. This event builds on ongoing discussions with stakeholders in the supply chain, including events facilitated by Vattenfall in September 2018, December 2018 and May 2019.

Purpose of the meeting

The purpose of the workshop was to bring together East of England Small and Medium Enterprises with an interest in the offshore wind supply chain, T1 companies and larger, established offshore wind farm supply chain companies, representatives of National and Local Government, and organisations supporting local growth, productivity and employability initiatives, and developers, to:

- Consider opportunities to increase participation in the Norfolk Vanguard and Norfolk Boreas projects, particularly from SME's in the East of England and the UK, in line with the Offshore Wind Sector Deal aspirations and Vattenfall's sustainable procurement requirements.
- Listen to a range of companies, across all categories & sizes about how we can collaborate better to achieve this
- Explore the challenges of 60% UK Content, 40 GW or 52GW by 2030 along with a globally constrained market
- Identify needs and gaps in terms of skills, staffing levels, scopes & knowledge so that:
  - Vattenfall are informed,
  - the supply chain, with support from local Econ Dev Stakeholders are encouraged to grow, and are equipped to realise opportunities from offshore wind.
  - Local suppliers are equipped and ready for the first scopes to be released after consent.



Participants & Contributors

The event was attended by companies that have expressed an interest in providing services to the Norfolk Vanguard and Norfolk Boreas projects and/or that represent service areas that could be delivered by local companies. As with Vattenfall's other supply chain workshops, this was not a "pre-selection" process and did not prejudice the Vattenfall procurement process in any way.

The style of the workshop was informal with a focus on enabling productive conversations. The aim was for collaborative exploration involving all participants into opportunities and barriers which can facilitate / hinder an enhanced, sustainable UK offshore wind supply chain. Participants were asked for their feedback and key messages to key Sector Stakeholders. In this way, all participants became contributors to the event, and to this report, and we'd like to express our thanks to participants for their candid and open views.

To facilitate discussions, participants were grouped on tables of 8-10 people, all sharing interests in the same package of works. At each table there was one or possibly two T1 or T2 companies. Also, at each table, to provide relevant detail and context to the dialogue, there was the relevant category manager or engineer from Vattenfall.

Table group discussions accordingly were focussed on the following overarching work packages: Wind turbine Generators (WTG), Foundations (FOU), Transmission / Grid (Grid) and including cables, Installation & Logistics (I&L – relating to foundations and inter array cables), Operations and Maintenance (O&M).

A list of participants and table groups are in Appendix A of our separate appendices document. Please find this on the supply chain pages of our website: https://group.vattenfall.com/uk/what-we-do/our-projects/supply-chain.

Sharing this meeting Report

Please share this report. It is intended to be a resource for companies interested in supply chain opportunities, as well as individuals and organisations working towards supporting the growth of the sector, and an enhanced, sustainable, skilled workforce. This report is available as a download on the Norfolk Vanguard and Norfolk Boreas web pages, along with other resources and information on the project.

Agenda

Time	Session	Notes
2.30	**Arrivals & coffee**	Meet & greet, informal networking Take seats by 3.00pm
3.00	**Welcome & Introduction to each other and to Vattenfall**	Kathy Wood, Vattenfall Head of Offshore Wind Consenting Catrin Ellis Jones Vattenfall's Norfolk Vanguard and Norfolk Boreas Stakeholder Engagement Manager
Offshore Wind Supply Chain: Opportunities and Expectations		
3.10	**UK Government perspective on Supply Chain Opportunities and Expectations:** the Offshore Wind Sector Deal, Contracts for Difference and Supply Chain Plans	Rob Lilly Vattenfall – UK Procurement Manager
3.25	**Vattenfall Wind Farm Design - what is our strategic focus?**	Wouter van Helden Offshore Wind Park Roadmaps & Design Engineer
3.35	**O&M - innovation for optimised operations**	Hernan Vargas Offshore Wind Operations and Systems & Design Engineer
3.45	**Project and cluster expectations - cooperation in practise**	Rob Lilly
4.05	**Reflection & plenary feedback**	Reflection at tables and plenary Q&A session
Planning our collaboration – programme mapping, information needs, next steps		
4.20	**Workshop session - working to Vattenfall's Norfolk projects' programme:** • Identifying supply chain interests & needs, potential barriers, challenges & solutions • Action planning	Facilitated / structured working session. Small groups arranged according to main packages. Each group will be joined by a Vattenfall category manager to ensure appropriate information is provided to enable discussions and decision-making. The worksheets provided will facilitate productive working session, which will identify clear, scheduled inputs from Vattenfall and Supply Chain Partners. The output will be to agree the next steps, including the next meaningful liaison with Vattenfall.
5.00	**Feedback from groups - reflections relevant to interfaces, key requirements, innovative solutions**	2-3 key points shared by each group – to get a flavour of package discussions (including interface challenges & solutions)
5.20	**Summing up, thanks and close**	Rob Lilly

Post-workshop agenda		
5.20	**VF Manager & T1 mini-surgeries**	Vattenfall & T1 company representatives are available for 3 x 10 minute 1-2-1 discussion sessions. Participant interested in taking advantage of these sessions to enable specific follow-up discussions and decision-making.
6.00	**Energy Skills Centre Launch & Reception**	Participants are cordially invited to hear a short welcome to the brand new Energy Skills Centre from the Principle, and to join a short tour of the facilities (optional).
6.30	**Skills and Apprenticeships Information Point**	Vattenfall to host a display and information exchange on skills and apprenticeships opportunities and developments to enable our Net Zero workforce of the future.

Offshore Wind Supply Chain: Opportunities and Expectations

An overview of presentations and key point

The presentations were intended to provide context for and to stimulate discussions of subsequent workshop sessions. The following paragraphs will be most useful if read in conjunction with the PowerPoint presentation slides provided in full in Appendix B, which can be found in the separate appendices document on our website: https://group.vattenfall.com/uk/what-we-do/our-projects/supply-chain.

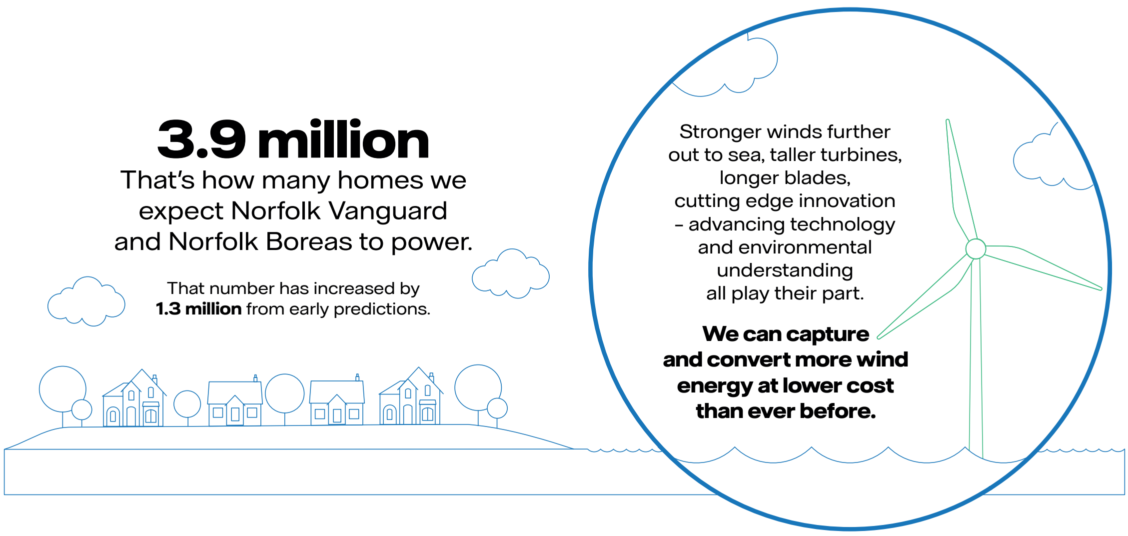
Opening remarks

Kathy Wood – Head of Offshore Wind Consenting, Vattenfall
Catrin Ellis Jones – Stakeholder Engagement Manager, Norfolk Vanguard and Norfolk Boreas, Vattenfall

The opening remarks from Kathy Wood described Vattenfall's aim of being fossil free within one generation. She talked about Vattenfall as one of Europe's largest producers of electricity and heat, and specifically its investment in offshore wind in the UK. She noted the great leaps made over recent years in innovation, enabling the deployment of larger turbines, larger wind parks in further-offshore locations, capturing stronger and more constant wind resources, as well as associated advances in transmission technology. All of this innovation heralds a new generation of offshore wind farms which are able to generate, effectively base-load power, at scale, and at ever more competitive cost to the UK consumer. Vattenfall anticipate the Norfolk Vanguard and Norfolk Boreas Offshore Wind Farms will deliver technological advances which contribute to the dynamic pace of innovation in the sector, helping to maintain the UK's global leadership in offshore wind farm deployment and intellectual capital.

Catrin then described the Offshore Wind Sector Deal. This is a partnership between the government and the offshore wind sector, which will help deliver on key pillars of the UK Government's Industrial Strategy to build a Britain fit for the future, and to support our transition towards Net Zero emissions by 2050.

The five foundations of the Industrial Strategy – an innovative economy; a business environment for enhanced productivity and competitive export capacity, upgraded energy infrastructure, opportunities for local growth, including in coastal counties and investing in the workforce to encourage inclusivity, diversity, up-skilling and progression – were each described in turn in relation to how even during their development phases, of the Norfolk Vanguard and Norfolk Boreas projects are paving the way to collaboration that can help enhance the opportunities for the locality, the region and the UK that can follow from these projects and the multi-billion pound investments required to deliver them.



Leading the way to a fossil free future

This meeting was convened as a direct result of requests from participants at previous Vattenfall local supply chain events, aimed at companies wanting to learn more about supply chain opportunities in the offshore wind sector. Vattenfall, and other developers tend not to introduce SME's and T1 / T2 companies to each other until much later in the development process, with consent and CfD in the bag, and some T1 companies already signed-up. However, it is noted that smaller companies, or those new to the sector need more time to prepare, to gear up for the opportunities that are coming. Furthermore, there is a greater pressure on all in the sector / wishing to enter the sector to go beyond current 50% UK content targets, and move towards the 60% by 2030 aspiration of the Offshore Wind Sector Deal. That means developers and T1s alike are going to have to look harder for collaborations with UK and local companies to reach those goals.

Other asks made by the (potential) supply chain to date include:

- more knowledge about Vattenfall's pipeline,
- Vattenfall's contracting strategy,
- information about how to register for the tendering process,
- information about Terms and Conditions,
- transparency about the scoring process during the selection of successful tenders

As a result of these types of requests, Vattenfall intend to be open in our interactions with the supply chain. Due to the wide range of opportunities, scopes and suppliers Vattenfall wants to avoid being too prescriptive in our approach but will send guidelines around HSE, legal and payment. The best approach for both parties around contractual risk and interfaces should ensure the appropriate level for all involved. This could be open book, so costs are jointly managed and agreed with a fixed margin, lump sum or reimbursable. Through the provision of information early and by encouraging collaboration Vattenfall aim to achieve more sustainable procurement and operations.

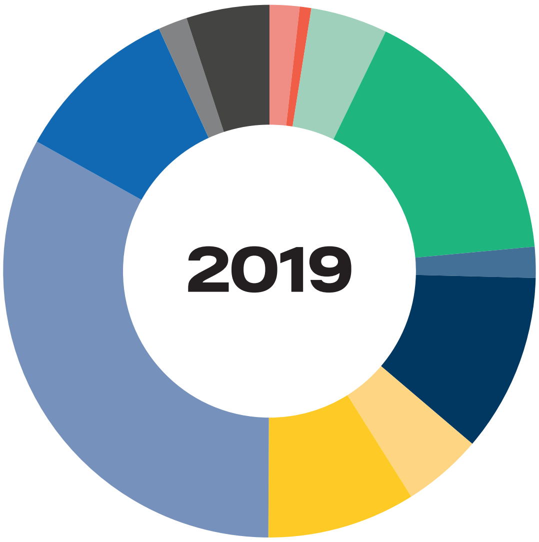
May 2nd, 2019 Supply chain meeting in Norwich, attended by representatives from around 200 UK companies to discuss opportunities associated with Vattenfall's UK pipeline, O&M opportunities on our existing projects and export opportunities. At this event, presentations were also given by organisations supporting the Sector and its supply chain, nationally and locally, including OWIC, NALEP, Norfolk County Council.

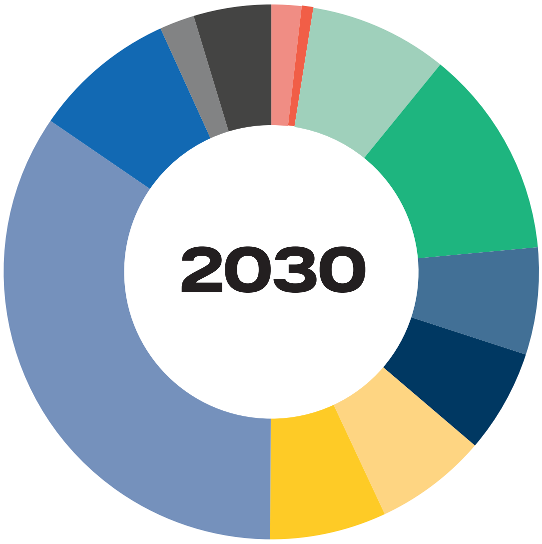
UK Government perspective on Supply Chain Opportunities and Expectations

Rob Lilly – UK Procurement Manager, Vattenfall

Rob Lilly provided an update on the UK offshore wind supply chain. According to 'Expert Nation', in the last year UK firms have won multi-million pound contracts supplying various components for offshore wind farm development. Some of the opportunities for suppliers on Vattenfall's Norfolk Vanguard and Norfolk Boreas projects were highlighted, and in particular work-packages that offer the most immediate potential for increasing UK-content.

Source: BVG Associates





Development and project management 2.5%
UK 1.8%

Turbine 21%
UK 5%

Balance of plant 13%
UK 2%

Installation and commissioning 14%
UK 5%

Operations, maintenance and service 43%
UK 33%

Decommissioning 7%
UK 2%

Development and project management 2.5%
UK 1.8%

Turbine 21%
UK 8%

Balance of plant 13%
UK 6%

Installation and commissioning 14%
UK 7%

Operations, maintenance and service 43%
UK 34%

Decommissioning 7%
UK 2%

In order to achieve 60% UK content, each category of works needs to have enhanced UK content. This is not just blades and turbines, we also need a significant proportion of the foundations to be fabricated in the UK. We need an HV cable factory, and we need a greater UK footprint for marine contractors.

300 Nacelles
2 factories
600 employees

900 Blades
4 factories
4000 employees

300 Towers
6 factories
1800 employees

200 Monopiles
4 factories
1200 employees

200 Transition Pieces
4 factories
800 employees

Jackets
4 factories
2000 employees

Array Cables
3 factories
900 employees

Export Cables
2 factories
600 employees

Operations & Maintenance
10 factories
1800 employees
180 jobs/GW for each additional project

Reaching the Government's target of 40GW of installed offshore wind capacity, and attaining 60% by 2030, presents real socio-economic opportunities, as shown here. A number of new factories and fabrication plants would need to be established, creating many hundreds of jobs. To attract this investment, a more consistent supply chain workflow is required.

https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk

Vattenfall Wind Farm Roadmaps Strategy

Wouter van Helden – Offshore Wind Park Roadmaps & Design Engineer, Vattenfall

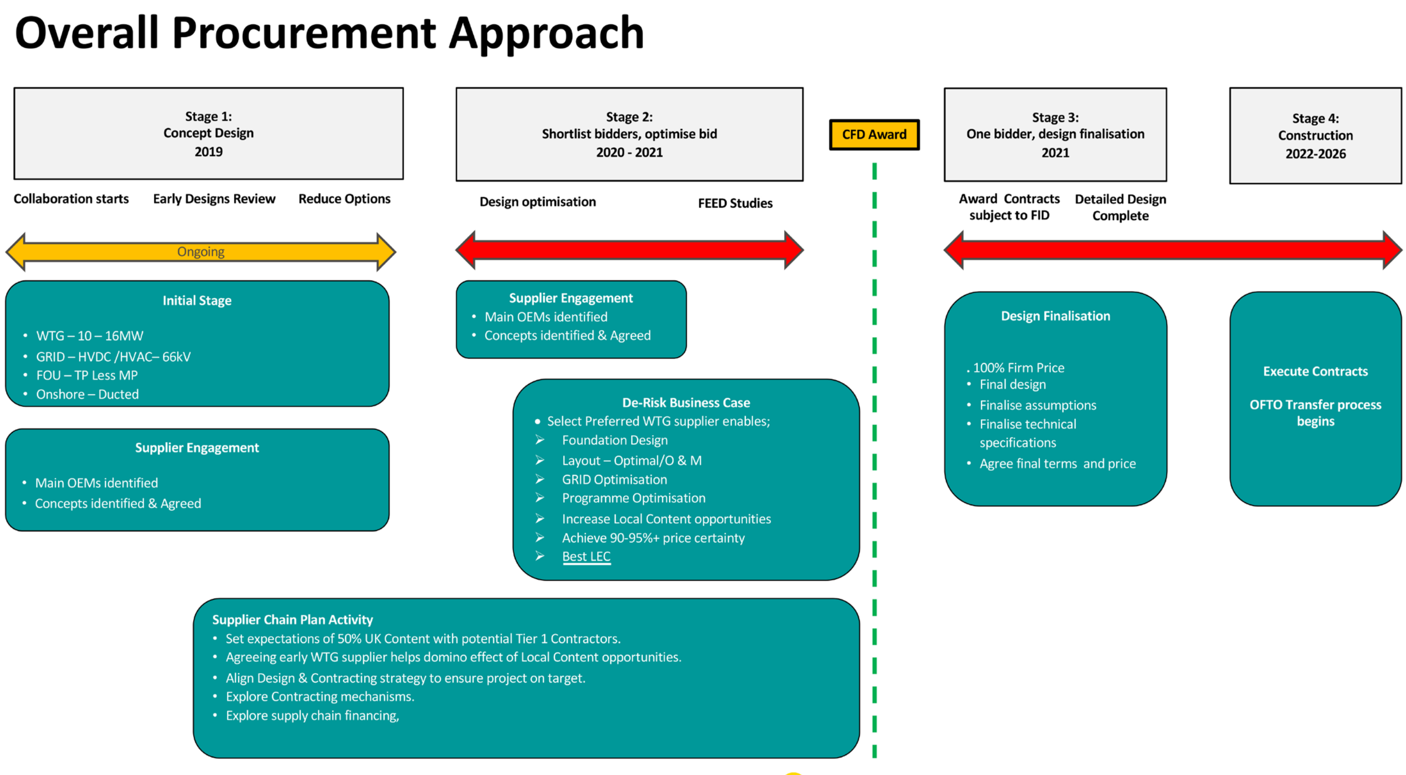
Wouter van Helden from Vattenfall's international wind park design team explained a new streamlined approach to design: creating a unified approach to developing all of Vattenfall's offshore wind farms will help create world class products across the whole portfolio. This shows a longer-term perspective on development, working closely with suppliers, and prevents reinvention between projects. The learnings, improvement ideas and technologies are therefore shared across all projects between Vattenfall and the supply chain.

Project and cluster expectations - cooperation in practise

Rob Lilly – UK Procurement Manager, Vattenfall

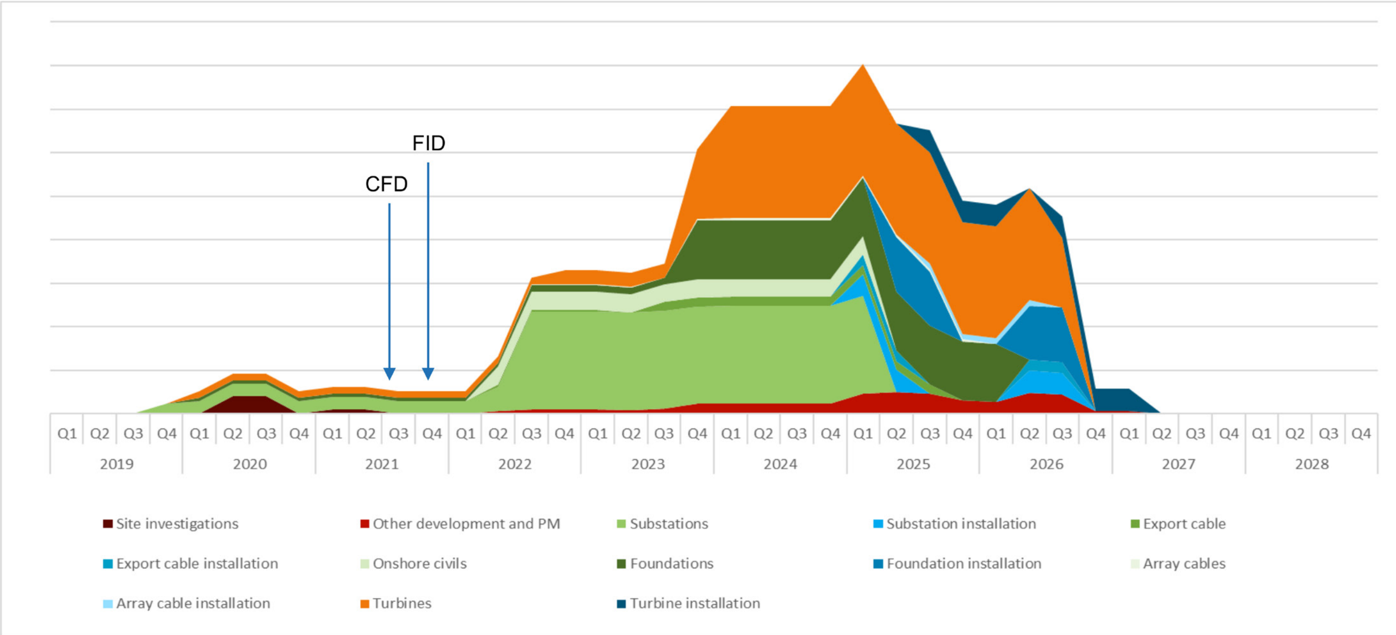
This session focussed on Supply Chain Plans, and how the requirements of the CfD process are adapting to reflect better the country's interest and needs, as defined by the Industrial Strategy and echoed in the Offshore Wind Sector Deal. An overview of Vattenfall's pipeline was considered, to show where current and future potential opportunities across Vattenfall's markets follow one another. It was pointed out that for the supply chain, the opportunities are not only with Vattenfall, but also with the sector as a whole, which ultimately will be stepping up efforts to reach the Sector Deal targets of 30GW by 2030, or the UK Governments targets (as of December 12th 2019) of 40GW by 2030, and beyond that to achieve Net Zero by 2050.

Vattenfall's procurement approach was mapped out – again providing visibility in advance for new entries and existing elements of the supply chain.



A high level view of the Vattenfall approach to Project procurement.

The schematic is from an internal management document. It is shared here in the interests of transparency on how we engage, and on our strategic procurement objectives.



This schematic shows the current spend profile of projects and the supply chain. This could be smoothed with a more *Collaborative portfolio approach,* rather than the "feast or famine" that ensues from *project by project* investment. The current CfD regime does not help horizon more than 2 years in term of investment.

O&M – innovation for optimised operations

Hernan Vargas – Offshore Wind Operations and Systems & Design Engineer, Vattenfall

Focussing on new opportunities to optimise and streamline operations and maintenance of a new generation of offshore wind farms allows greater flexibility for the operator and for their supplier, but the ultimate goal is to ensure optimised operations and electricity generation and transmission. Currently projects are developing a cluster approach – large coordinated projects.
In the future, and already the case in markets like Denmark, a hub approach is possible, Beyond that, possibly we are looking at sector coupling. Logistics and O&M are potentially work packages that must adapt to future demands, faster than any other. By implication port facilities too must adapt and evolve to accommodate this dynamic reality.

Horns Rev 3 offshore wind farm – turbine construction in the North Sea

Workshop session:

Planning our collaboration – programme mapping, information needs, next steps and messages to key stakeholders & each other

The questions we felt would best stimulate productive discussions, and help identify potential opportunities and barriers to a better adapted, productive and sustainable UK offshore wind supply chain were described and posed in plenary.

Recognising that at each table, participants with a wide variety of interests, needs and perspectives – depending on whether they were representing a local SME or a multinational T1 company, or a developer, or a Local Authority or the New Anglia Local Enterprise Partnership for example – would generate different and varied priorities and views on next steps, we gave several sets of worksheets to each table. In some instances, the table found sufficient commonality and worked as a single group, while on other tables, several sets of worksheets were completed.

The package of worksheets included:

1. **Timeline, for participants to draw on / annotate to illustrate key milestones pertinent to their supply chain process and delivery programme.**

   Prompts / questions intended to help mutual understanding of different stakeholders' key milestones, inter-relationships / interfaces between packages and assumptions made:
   i. When you think it is optimum for us to engage with you to ensure we hit our key milestones?
   ii. Based on (i), when will you engage with your supply chain?
   iii. Note any dependency on information from another package, [or draw a connector on the planner worksheet].
   iv. What assumptions are you making / what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme

2. **Worksheet: If you could ask for one thing from Government / suppliers / T1 / developers, what would it be?**
3. **Worksheet: Imagine a new scenario where we have certainty on our 4GW* of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

*Vattenfall currently have approximately 4GW in the planning system – Norfolk Vanguard, Norfolk Boreas and Thanet Extension (part of Vattenfall's Kent cluster of projects)

Copies of the worksheets are in Appendix C of the separate appendices document, which can be found on the supply chain pages of our website: https://group.vattenfall.com/uk/what-we-do/our-projects/supply-chain.

All responses have been typed up, verbatim, and are reproduced in full in Appendix D of the same document.

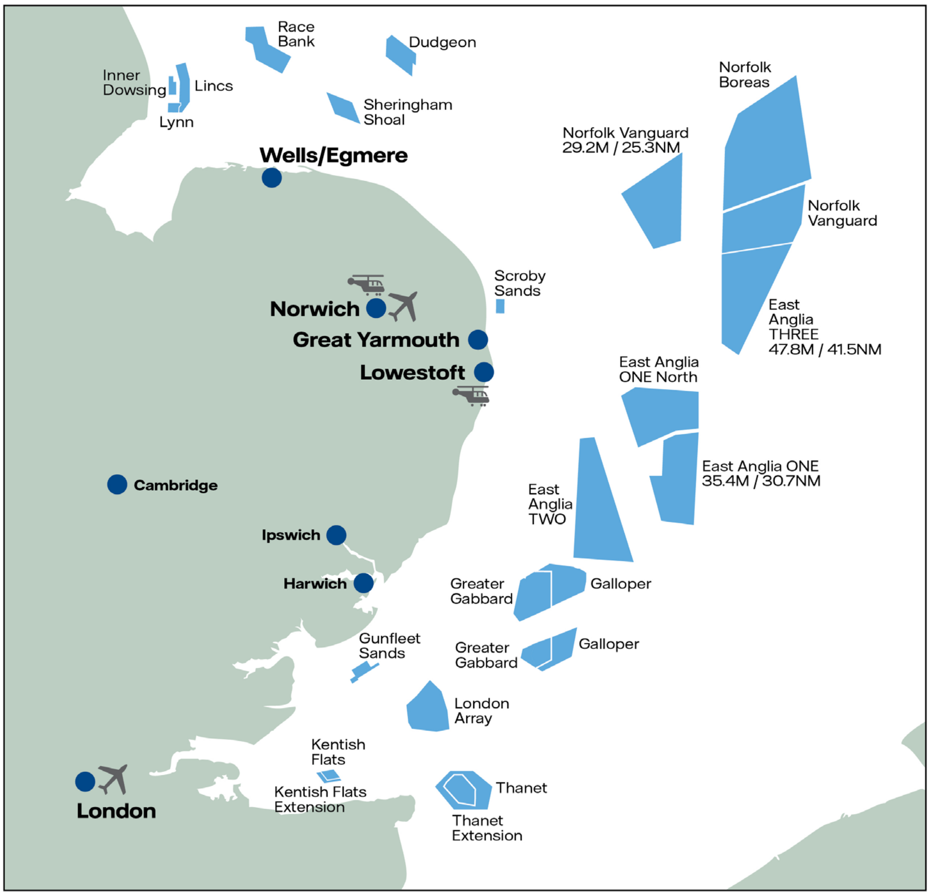
https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk

Summing up, next steps and close

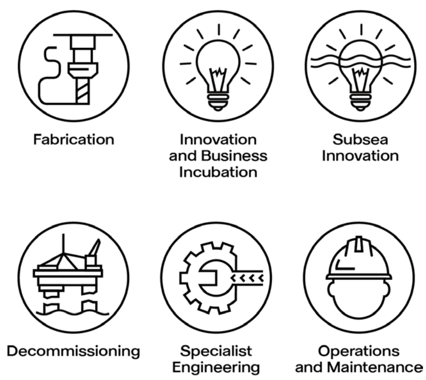
Rob Lilly – UK Procurement Manager, Vattenfall
Catrin Jones – Norfolk Vanguard and Norfolk Boreas Stakeholder Engagement Manager, Vattenfall

The final talk from Rob and Catrin encouraged attendees to register their supplier interest on the Vattenfall website if they hadn't done so already, to ensure they are kept up to date on procurement as the Norfolk Boreas and Norfolk Vanguard projects progress. Workshop attendees were informed that feedback from the group activities would be collated and summarised in a report, and later circulated for consumption. The report would also be published on Vattenfall's website so a wider audience are made aware of the discussions and next steps.

East Anglia offshore wind cluster



Key specialisms.



The East Anglia cluster aims to produce 8.4 GW by 2032.

It offers:

- World-class physical infrastructure
- Suitable ports
- Established offshore supply chain
- Skilled workforce
- An All-Energy Industry Council to oversee the regional cluster development.

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The Offshore Wind Industry Council (OWIC) identify the strengths of a burgeoning East Anglia cluster. More coordinated and collaborative action across the sector may encourage greater investment and a new world of offshore opportunities.

https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk