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Spreading the risk, piling up the opportunities: Offshore wind diversification

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Agenda

Spreading the risk, piling up the opportunities: Offshore diversification

Contents

Selected clients

BVG Associates

Business advisory

- Analysis and forecasting
- Strategic advice
- Business and supply chain development

Economics

- Socioeconomics and local benefits
- Technology and project economic modelling
- Policy and local content assessment

Technology

- Engineering services
- Due diligence
- Strategy and R&D support

1. Abstract: Offshore wind diversification

The dawn of a new era rather than a sunset for our oil and gas supply chain

It doesn't need to be either or – spreading the risk / reward

• Diversification can be a great business strategy - a targeted move into a new sector can spread risk, generate new revenue and reduce unit costs.

• Key to successful diversification - ensure there is capability overlap between "legacy" and "new " industry.

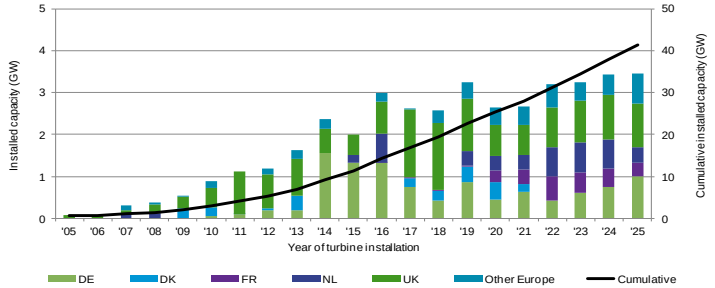
• The oil & gas overlap – offshore wind open to suppliers from all sectors but capability correlation between offshore wind and oil and gas is naturally very high.

• Two-way learning - processes and innovative thinking developed over decades in oil and gas can be transferred to offshore wind / rapid cost reduction, standardisation and faster deployment techniques in offshore wind can benefit oil and gas.

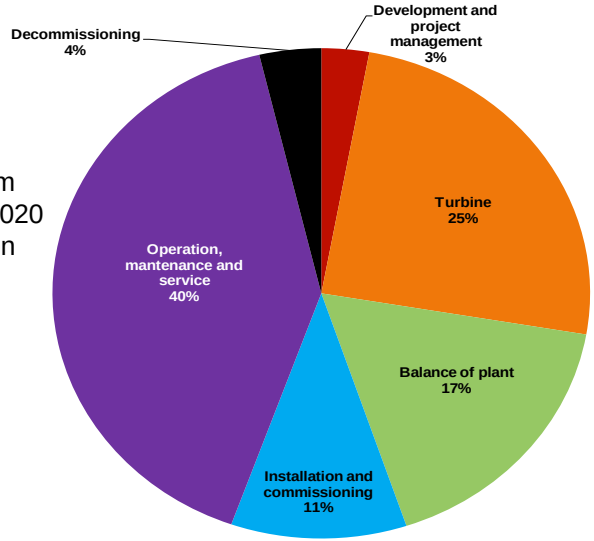
2. Offshore wind at a glance

Europe's dominant position / Where the money goes / Cost reduction trajectory

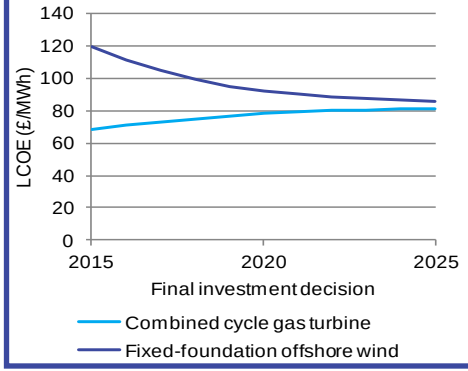
UK companies competing against a strong continental supply chain, particularly for CAPEX



UK will continue as global leader for the next decade but activity in Germany and Netherlands to increase. Asia and North America to ramp at pace from 2020.



The lifetime undiscounted cost of a wind farm reaching final investment decision (FID) in 2020 for a 500MW project, using 8MW turbines, on jacket foundations, in 45m water depth, in 40km from shore is about £5.4 billion.

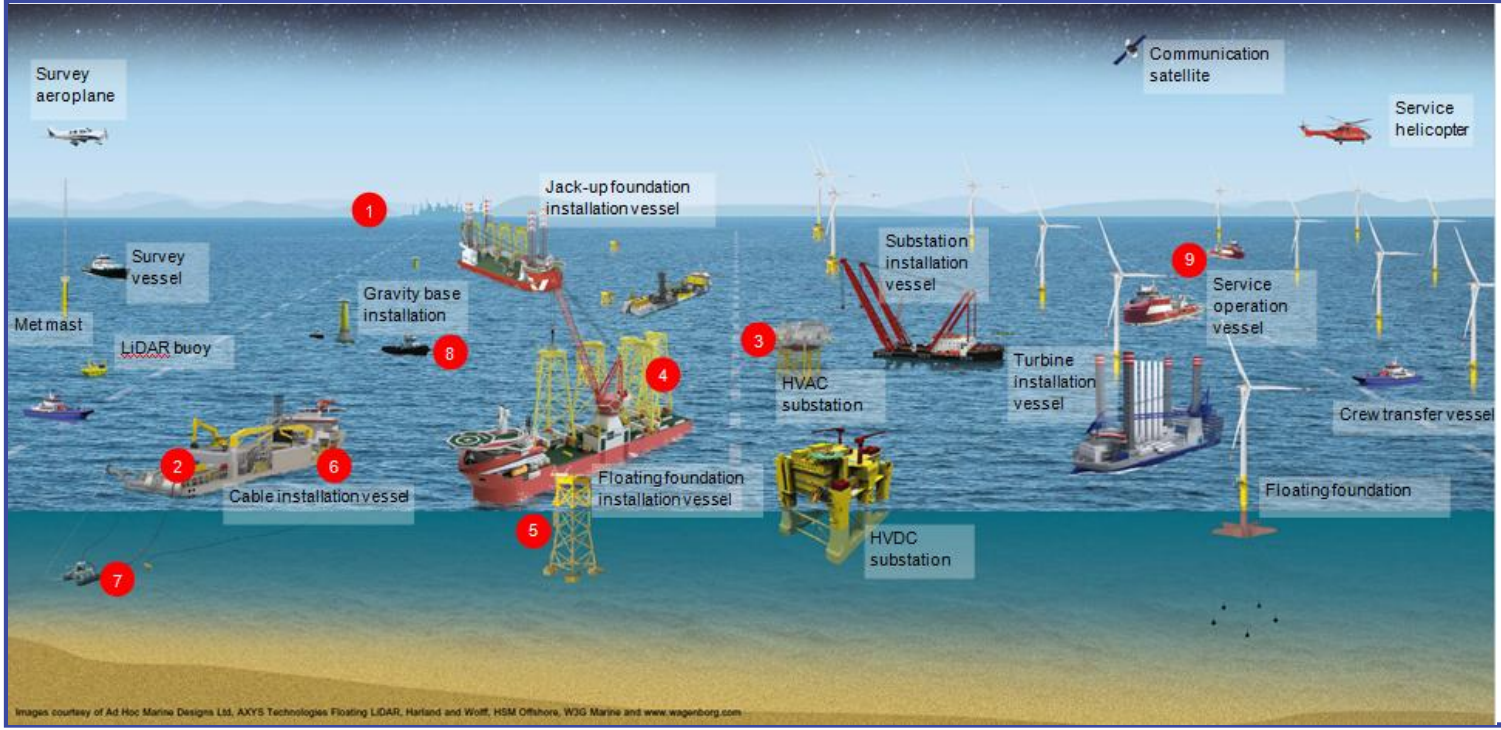


Global deployment dependant on offshore wind continuing on current cost reduction trajectory.

3. Offshore wind high potential diversification areas

Supply chain split into 35 sub-element areas of supply – 9 ‘hot spots’

Considers O&G track record in wind, supply synergies, appetite, cost-out potential, investment & size of the prize



1. Project management
2. Array cables
3. Substation structures
4. Turbine foundations
5. Secondary steelwork
6. Cable installation
7. Installation equipment
8. Installation support services
9. Operations, maintenance & inspection services

3. Offshore wind high potential diversification areas

£8 billion of high potential annual spend by 2025 up for grabs

A number of traditional UK oil & gas companies have successfully navigated challenges to entry

1. Project management	Oil and gas companies are already offering skills in managing complex projects offshore. *"There is a realisation of the benefits that offshore oil and gas expertise can bring to the emerging offshore wind sector"*
2. Array cables	Their manufacture requires similar skills and equipment to O&G umbilical manufacture. "*The fact we are able to develop solutions which can be deployed in both sectors allows us to share best practice across industries"*
3. Substations structures	These are typically one-off designs on a similar scale to oil and gas platforms. *"One of SLP's main objectives has been to apply its long experience in designing and building offshore platforms for the oil and gas industry to the offshore wind sector"*
4. Turbine foundations	Fabrication skills from oil and gas can be harnessed to produce serially manufactured structures. *"The growing offshore wind sector can be served in conjunction with the oil and gas sector. We are demonstrating to wind developers that we can manufacture foundation structures in volume"*
5. Secondary steelwork	This is an accessible market for companies without the capacity for foundation manufacture and entry may not need new coastal facilities. *"We have enhanced our automated cutting and profiling services to develop a lean manufacturing plan for competitive volume fabrication for the offshore secondary steel market in particular."*
6. Cable installation	Most experienced contractors have not only oil and gas experience but learnt that the complexity of offshore wind contracts presents significant new challenges. *"If you are a company that can offer high calibre engineering support, you can more than succeed in offshore wind in UK and beyond"*
7. Installation equipment	The transition from oil and gas equipment supply has been made by a significant number of companies, for example in pile and cable handling equipment and trenching and burial tools. *"There is a definite appetite for robust, simple and cost-effective solutions in this new market"*
8. Installation support services	The experience of working offshore can bring real benefits to offshore wind not only in subsea services such as diving and ROV services but also in onshore activities such as marine consultancy. *"The supply chain has to work hard tendering against projects that are not fully financed…. get it right and offshore wind can be a long-term part of a company's strategic vision with excellent global prospects"*
9. Maintenance and inspection services	Oil and gas experience of offshore logistics can shape evolving strategies in wind. "*New market entrants must have a clear idea of what their core competence is and how to articulate their value proposition. Companies must show how they can help customers improve asset efficiency or reduce cost"*

4. Facing the diversification challenge

" It's offshore marine Jim but not as we know it…."

Understand core competence, address the supply gaps in offshore wind seeking highest LCOE savings

Differences	Offshore wind market characteristics	Oil and gas market characteristics
Volume and nature of supply	High numerical demand for standardised goods and services	Low numerical demand for bespoke goods and services
Subsidies	Direct price support	Indirect tax credit support
Culture	Innovation at pace in an environment with technical unknowns	Incremental innovation within an established environment
Value	Achieved through intellectual property ownership	Achieved through efficient control of spend and product standardisation
Contracting	Less established processes and adversarial in nature to stimulate cost reduction	Standardised contract header terms with high collaboration across supply chain

Challenges

- Lack of track record
- Risk-averse investors
- Cost competitive ness
- Contracts (Lump sum / fixed price)
- Contracts (Lump sum / fixed price)

Mitigations

- Target multiple projects (framework)
- Long-term OPEX focus: high local content
- Target multiple projects (framework)
- Disruptive innovation / cost competitive
- Floating wind: high O&G structure synergy
- Understand differences with clear strategy

Thank you

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