

Making green growth real: UK offshore wind supply chain



Disclaimer

This report is a summary of proceedings of a roundtable meeting held at The Royal Academy of Engineering in March 2011. The meeting was held with the support of OrbisEnergy and was attended by representatives of industry, government and other relevant organisations (a full list of attendees can be found on p.17). The report reflects the discussions that took place at the meeting but it should be noted that while the conclusions and recommendations reflect the majority opinion they do not necessarily represent the policies of the organisations involved.

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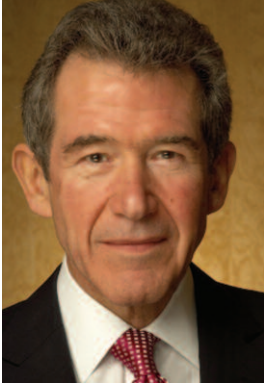
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*Lord Browne of Madingley
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Making green growth real: UK offshore wind supply chain

Foreword

The UK faces a mammoth task in developing offshore wind. The 13GW scenario set out in the government's National Renewable Energy Action Plan requires a tenfold increase in capacity between now and 2020.

That level is ambitious, but it is justified by the enormous contribution that offshore wind can make to the government's policy goals. Most obviously, offshore wind can help fulfil our energy policy objectives by reducing emissions in line with our international commitments, enhancing our energy security by reducing imports and insulating consumers from the volatility of fossil fuel prices.

Less often spoken about is the contribution that offshore wind can also make towards our economic policy objectives. It can help to rebalance the sources of economic growth towards engineering and manufacturing, it can create new high-value-added industries to sustain tens of thousands of green jobs¹ and it can spur economic development across the UK regions.

At the moment, the UK is manifestly failing to capture these economic benefits. Last year the world's largest offshore windfarm was opened at Thanet – yet less than 20% of that £900m investment went to UK firms². Examples like this prompted us at The Royal Academy of Engineering to ask, "How can the UK retain more value from the deployment of offshore wind?"

The answer lies in the supply chain.

Much of the focus so far has been on attracting turbine manufacturers to the UK, with notable successes in bringing Vestas to Kent, Gamesa to Dundee and Siemens to Hull. These businesses will be an important provider of jobs in



these regions. But turbine manufacturers are only part of the picture. Half of the capital expenditure on offshore wind is typically spent elsewhere, on areas such as foundations and cabling. And as much as 30% is reserved for operations and maintenance, an area where home-grown engineering firms should have a natural geographic advantage.

The government must play a leading role in supporting UK businesses to make the most of the supply chain opportunities in offshore wind. To some that might seem controversial, but I believe it is justified on three grounds. First, because a thriving supply chain will be a key driver of cost reductions vital to developing offshore wind affordably. Second, because some of our competitor nations are already favouring 'local content'. And third, because in North Sea oil and gas we have a powerful example of what smart policymaking can achieve.

People forget that the government supported the oil and gas supply chain in its early days: with generous tax incentives; training programmes; strategic infrastructure; and supportive regulation. The result today is a world-leading industry, creating jobs in manufacturing and engineering across the UK. The UK oil and gas supply chain generates £16bn each year, including £5bn in exports, and employs more than 300,000 people in the UK, around 80% of them outside London and the South-East.

That is a valuable economic legacy, which was accelerated by early government support, and which can now be repeated for offshore wind.

To learn more about the opportunities and challenges for the UK's offshore wind supply chain, The Royal Academy of Engineering gathered together leaders from across the industry – developers, suppliers, financiers, policymakers, port owners and education providers – at a roundtable discussion on 11 March 2011.



This document summarises the conclusions from that roundtable – making recommendations in four key areas: Infrastructure, Skills, Investment and Health and Safety.

More generally, it was considered that the government should continue to:

- Support UK businesses that have already secured opportunities within the sector.
- Engage with businesses planning to enter the market and help them to understand the industry.
- Explore opportunities for UK companies unaware of the sector, matching gaps in the supply chain to the capabilities of businesses.

I hope that this document will be an important step in the on-going conversation between industry and government. If we work together, I believe that the offshore wind supply chain can be a triumph, not just for UK engineering and the UK environment but, crucially, for the UK economy.

A handwritten signature in blue ink, appearing to be 'J.B.', with a long horizontal flourish extending to the right.

The Lord Browne of Madingley FREng FRS
President, The Royal Academy of Engineering



Infrastructure

To create a thriving offshore wind supply chain, the UK must have the infrastructure to compete with its European rivals. The quality of our ports is of particular importance.

UK ports have the capacity to support a large and successful supply chain, but many require new infrastructure to do so. Before port owners make these investments, they need more certainty over their long-term return – certainty that will not materialise while most of the supply chain remains abroad. The government's strategy to **encourage Tier 1 businesses³ to locate at UK ports** is the right response. Their presence will catalyse development in the rest of the supply chain, sustaining as many as eight jobs in the wider industry for each job created at a Tier 1 manufacturer⁴. As Tier 1 manufacturers commit to UK ports, the focus should move towards encouraging companies further down the supply chain.

Beyond this government can play a role in **providing financial support for the upgrade of our ports**: making them capable hubs for a UK supply chain; and allowing them to compete on a level playing field with their state-owned European counterparts. Investment today is critical – waiting for developers' Round 3 orders⁵ would be too late. Given limited funds, it makes sense to **develop a UK-wide strategy focusing on a select number of locations spread around the coast**, each serving a broad geographic region. Restricting grant-aid for vital port upgrades to the limited number of Assisted Areas – as is the case with the current £60m fund – will direct money away from some strategically attractive locations.

The government can also help to **catalyse private sector investment in infrastructure**. Cost-effective initiatives in this area could include: support for the promotion and marketing of UK ports; workshops to bring together ports; developers; manufacturers and investors; and co-operation

with local bodies to identify suitable manufacturing facilities around our ports.

Planning regulations remain a barrier to the development of offshore wind infrastructure. The government must ensure that planning timetables for Zone Development Agreements are adhered to and must continue to **streamline the entire planning process, treating applications connected to offshore wind as national infrastructure priorities**. Planning permission for grid infrastructure – particularly onshore substations and High Voltage Direct Current cables – may be the biggest obstacle.





Skills

A successful offshore wind supply chain has the potential to sustain tens of thousands of jobs across the UK's regions. But it can only do so if there are skilled workers available.

The UK offshore wind industry faces a shortage of suitably skilled workers in both technical and commercial disciplines and faces stiff competition for talent with other industries, particularly offshore oil and gas and other major construction sectors. Relying on talent from those sectors or importing labour from abroad will not be sufficient.

Many of the skills required in the offshore wind industry are also required in other parts of the energy industry. The training and education infrastructure supporting the industry is fragmented, with too many disparate bodies working in isolation and new bodies being created. The current system leads to increased costs and duplication of training efforts and creates barriers and confusion for employees moving between sectors. If the UK is to make the most of the green growth opportunity, **government must act to increase the total pool of skilled workers available to the energy industries and simplify the supporting infrastructure.**

In particular, the government must do six things:

1. **Encourage competence-based qualifications and accreditations applicable across the energy industry.** Sectoral qualifications and accreditations reduce access for individuals wishing to enter the industry and add costs for companies in lower tiers of the supply chain, particularly SMEs, who operate across the energy industry. Measures to rectify this could include the introduction of an energy-wide framework of qualifications and accreditations.
2. **Roll out Energy Skills Partnerships across the UK.** The Skills for Energy partnership piloted in the East of England is a unique and successful example of how



industry-led programmes at the local level, in co-operation with the public sector and education providers can solve skills issues.

3. **Encourage ECITB⁶ to take the leadership role in energy skills.** Although numerous bodies are active in the area of energy skills, no one body currently takes the lead, and the industry lacks a sense of direction and coherence. ECITB should take on the role of bringing engineering coherence across energy sectors, with OPITO⁷ leading on offshore-specific skills.
4. **Increase the portability of skills between energy sectors.** Measures could promote schemes to retrain those moving between sectors, and programmes to ensure diversity and social inclusion.
5. **Build awareness of the energy industry among teachers, careers advisers and students.** Many young people do not even consider energy as a career choice. Industry and government must work together to build awareness of the opportunities on offer and to enthuse young people about the role they can play in addressing the great energy challenges we face.
6. **Continue to support and promote Science, Technology, Engineering and Mathematics (STEM).** At the base of the skills shortage is low take-up rates for these subjects among young people: government must continue to support them at every level of the education system.

The government should continue to refine the apprenticeship programme: ring-fencing funding for advanced-level apprenticeships in STEM sectors; ensuring that the content of courses is relevant to the needs of employers; and explaining the value of apprenticeships to new companies in the industry. This should include creative training programmes such as Skills Enhancement Centres, through which apprentices can benefit from off-site training to accelerate their development.



Investment

Building a successful UK supply chain and meeting the government's bold ambitions for offshore wind depends on attracting capital investment – as much as £100bn for Round 3⁸. Despite taking a leading role so far, this scale of investment is beyond the capabilities of the UK's "Big Six" utility companies⁹. Additional capital will need to come from international sources and from new institutional investors such as banks, pension funds and insurance companies.

Market signals will be paramount in attracting these investors, but the government can also do a great deal to make investment more attractive. The urgent priority is to provide clarity and certainty about the support mechanisms on offer. In particular, the government should:

1. **Honour the timetable for Electricity Market Reform (EMR).** Uncertainty surrounding the reform proposals is already damaging investor confidence. To prevent this short-term lull turning into long-term stagnation, the EMR process must be conducted promptly in line with the timetable communicated to investors. The final proposals must be simple and predictable enough to attract internationally mobile capital from non-traditional sources.
2. **Provide clarity on how the transition to Feed-in Tariffs will work,** and how the Renewables Obligation will operate under the new regime. Long-term certainty on Renewable Obligation Certificate (ROC) banding is also needed – the extension of two ROCs for offshore wind in the current banding review would give supply chain investors the certainty they need.
3. **Establish a compensation mechanism for offshore wind developers superseded by oil and gas.** The Crown Estate leases for offshore wind projects contain a

clause allowing the lease to be terminated without compensation if oil or gas is found. Although this has not yet prevented any projects going ahead, the clause presents a financing risk for banks and therefore increases the cost of debt for offshore wind projects.

The government should also **kick-start investment with targeted financial support during the construction phase, through loan guarantees or similar products delivered by the Green Investment Bank**. A key obstacle to investment in offshore wind is the inability of contractors to guarantee project costs, due to the limited track record of the industry. Many potential investors remain concerned about construction risks and are unwilling to invest without such guarantees. Government guarantees could remove this short-term barrier to investment in early Round 3 projects. Once these are completed and the risks are better understood, contractors and investors will be in a position to bear the full risk themselves.

Finally, the government should **indicate its intentions for further development rounds**. The prospect of sustainable growth in the long-term would provide extra confidence for supply chain companies looking to invest today.





Health and Safety

Health and Safety is of paramount importance to the offshore wind industry, especially as it expands into deeper water, more extreme weather and larger projects.

UK offshore wind developers are already bound by the Construction Design & Management (CDM) Regulations 2007, which apply to all projects involving construction work carried out in the UK and its territorial waters, whether based on land or at sea. The current Health and Safety regime for offshore wind combines these CDM regulations with best practice from the offshore oil and gas industry and the port and marine industries, along with guidance from RenewableUK.

Many in the industry believe that this situation is unsatisfactory, and that the safety of the industry currently relies on self-regulating operators continuing to follow good practice. UK companies generally adopt very high standards of Health and Safety, but there is agreement in the industry that not all players are holding themselves to this high bar.

The government should act to **ensure that the Health and Safety regime for offshore wind is rational, clear, and tailored to the specific combination of risks present**. In doing so the government should recognise that:

- There is much to learn from the offshore oil and gas and port and maritime industries, which have many years of experience in similar and complementary operations.
- The Health and Safety regime is only effective if rigorously enforced by people who understand the industry.



- Businesses currently working on offshore wind projects are well placed to inform safety standards and industry best practice – these companies have built up the experience of what works and what does not.
- Many of the most effective safety measures are implemented during design or manufacture, before any offshore work takes place.

The government should **consider transferring guidance and enforcement responsibilities for offshore wind Health and Safety to the HSE Offshore Division**, which is currently responsible only for oil and gas. However, the requirement on the oil and gas industry that the HSE Offshore Division approve each installation in advance is not suitable for offshore wind, which has a larger number of smaller installations, without many of the risks of hydrocarbon extraction.

In addition, the government must **ensure that all operators on UK sites are subject to UK Health and Safety standards**, regardless of the distance from shore, the nationality of the developer or the flag flown by the vessel.

A number of groups are already looking into the question of Health and Safety for offshore wind, but the overall direction remains unclear. The industry urgently needs a clear indication of how the government plans to move forward with the Health and Safety regime for offshore wind and which organisation will be responsible for enforcing the standards.

References

- 1 Carbon Trust, *Offshore Wind Green Growth Paper*, April 2011. P7 Offshore wind could generate 80,000-230,000 jobs
- 2 Vattenfall; see Guardian, *British firms miss out as world's biggest offshore windfarm opens off UK coast*, 23 September 2010
- 3 Large-scale manufacturers of turbines, foundations, substations and cables
- 4 The Crown Estate at The Royal Academy of Engineering Offshore Wind Supply Chain Roundtable, 11 March 2011
- 5 The third round of offshore wind farm sites leased by The Crown Estate. Announced in 2008 and aims to deliver 32GW of total capacity
- 6 Engineering Construction Industry Training Board
- 7 OPITO is the UK Oil & Gas industry's focal point for the skills and knowledge agenda
- 8 UK Energy Research Centre, *Great Expectations: The cost of offshore wind in UK waters – understanding the past and projecting the future*, September 2010. P.93 Construction cost in 2025 estimated at £2.4m - £3.8m / MW. Implied investment of £76.8bn to £121.6bn for 32GW of planned Round 3 development
- 9 In recent years the "Big Six" have invested around £8bn per year in the UK across every type of energy; House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, 16 May 2011. "Big Six" refers to British Gas, EDF Energy, E.ON, RWE npower, ScottishPower and Scottish and Southern Energy

Offshore wind supply chain roundtable

The Royal Academy of Engineering, 11 March 2011

Roundtable attendees list

Chair

Lord Browne FREng FRS President, The Royal Academy of Engineering

Speakers

Blair Ainslie	Managing Director, Seajacks UK Ltd
Roy Evans	Head of Development & Asset Management, The Crown Estate
Duarte Figueira	Head of Offshore Renewables, DECC
Magnus Öhrman	Head of Procurement, East Anglia Offshore

Participants

Celia Anderson	Executive Director, EEEGr
John Balch	Managing Director, Nautilus Associates Ltd
David Binnie	Managing Director, OPITO
José Luis Blanco	Offshore Director, Gamesa Offshore Unit
Heidi Bridger	Senior Policy Advisor, BIS
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Andrew Donaldson	Offshore Engineering Manager, SSE Renewables
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Chris Hunt	Managing Director, Riverstone
David Leighton	Government Affairs Manager, Associated British Ports
Simon Maine	Research Assistant to Lord Browne of Madingley
Mark Malone	Managing Director, Svitzer UK
Jason Martin	Head of Offshore, Scottish Power Renewables
Chris Morgan	CEO, RES Offshore
Jonathan Reynolds	Development Director, OrbisEnergy
Alan Walker	Policy Advisor, The Royal Academy of Engineering



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The Royal Academy of Engineering

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