

**Comments in response to the inquiry by the Environmental Audit
Committee:
Technological Innovations and Climate Change: Offshore Wind**

Who are we?

Ocean Energy & Resource Ltd is a uniquely innovative ocean and offshore energy engineering company with 40 years of real experience and pedigree in design and engineering for offshore oil and gas, offshore renewables, carbon sequestration and marine applications.

We have developed game changing, low cost technology for oil and gas marginal fields, deepwater developments, brown field extensions, tie-backs, remote step-outs, early production and end-of-field-life depletion scenarios and ***uniquely cost-effective solutions for offshore renewables for wind, wave and tidal projects.***

Specifically, regarding this inquiry, we are the world leaders in large tension leg floating offshore platforms and our floating wind platform is based on this unequalled expertise.

We address three of the points raised for this inquiry below:

- **How effective has the Government’s offshore wind Sector Deal been in moving the sector towards becoming an integral part of a low-cost, low-carbon, flexible grid system and boosting the productivity and competitiveness of the UK supply chain?**

We note that the Offshore Renewable Energy Catapult have set out their aspirations on behalf of the UK government to increase the local content for offshore wind farms to 65% by 2030.

Today we still see far too much of the equipment for offshore wind farms being brought in from overseas and little motivation to use UK suppliers. For example, even in this past month we have seen the Moray East Offshore wind farm foundations arrive from the United Arab Emirates; 45 of their fixed 1000 tonne jacket foundations will be shipped by vessel in batches of 8 at a time to Scotland using 6 vessel trips over 13,000 kms, not a low carbon solution. (the other 55 were being fabricated in Newcastle which must be little more than a nod to increase the UK content).

BVG Associates, a highly respected consultant to the wind industry, commented that “The 65% figure supposes that we can reach our full potential, that is with all turbines, cables and substations made in the UK and all components installed by UK contractors. In a rapidly expanding UK market, the new inward investment that could in theory make this happen, but despite the good backing from the government, this is an unlikely scenario.” (Ref. 1) In our view, the backing from the UK Government and Welsh Government under whose jurisdiction we sit has been deplorable. Looking around Europe and beyond, we see better support for innovation in offshore wind energy.

For floating offshore wind (FOW) there is no significant financial support to grow the home market in the UK yet. The first FOW farm was supplied from Norway, Denmark and Spain (Hywind Scotland Wind Farm). What we need is a UK supply chain to build low cost floating offshore wind foundations.

We think the Government needs to take a reality check. It’s offshore wind Sector Deal seems to have been far from effective in the light of these comments.

It is now urgent to support innovation further to develop the UK supply chain for floating offshore wind as the key high value contribution must come from foundations and cables. The wind turbines will always come from the existing suppliers, most of whom are not UK based. To increase the local content to 65%, there must be further modest investment in UK businesses that will develop UK based solutions! (see also further comments below). Moreover we also need support and pressure for demonstration sites with the developers and The Crown Estate.

REF 1. <https://bvgassociates.com/industrial-strategy-uk-content-offshore-wind/>

- **What level of output can the sector deliver in the UK, and what Government support would be needed to achieve this?**

As a developer of floating offshore platforms, we strongly believe UK built and supplied floating foundations will support more than 400 jobs over the next 10 years. These will support the supply up to 200 foundations annually and attract **£10 Billion of business** in the UK by the offshore wind farm developers. The early move in the UK would attract export business.

The investment required would be around £10 Million (0.1% of the value) to support a competition for 3 potential designs around the concept designs: Tension Leg Platform, Spar-Submersible and Spar-Buoy as illustrated in the image below, though it is hard to see how the latter could be built in the UK. A key requirement must be that these structures must be low cost and able to be built and assembled in UK ports. A further £20 to £40 Million may be necessary to take the best design(s) to full scale demonstration with a supporting wind farm developer. Still a modest investment for the £10 billion prize for UK plc. Let's stop flirting with the overseas competition and use UK businesses to build UK business, employing UK citizens (who also pay UK tax!) for floating offshore wind!

Figure 1: Offshore wind floating foundation concepts

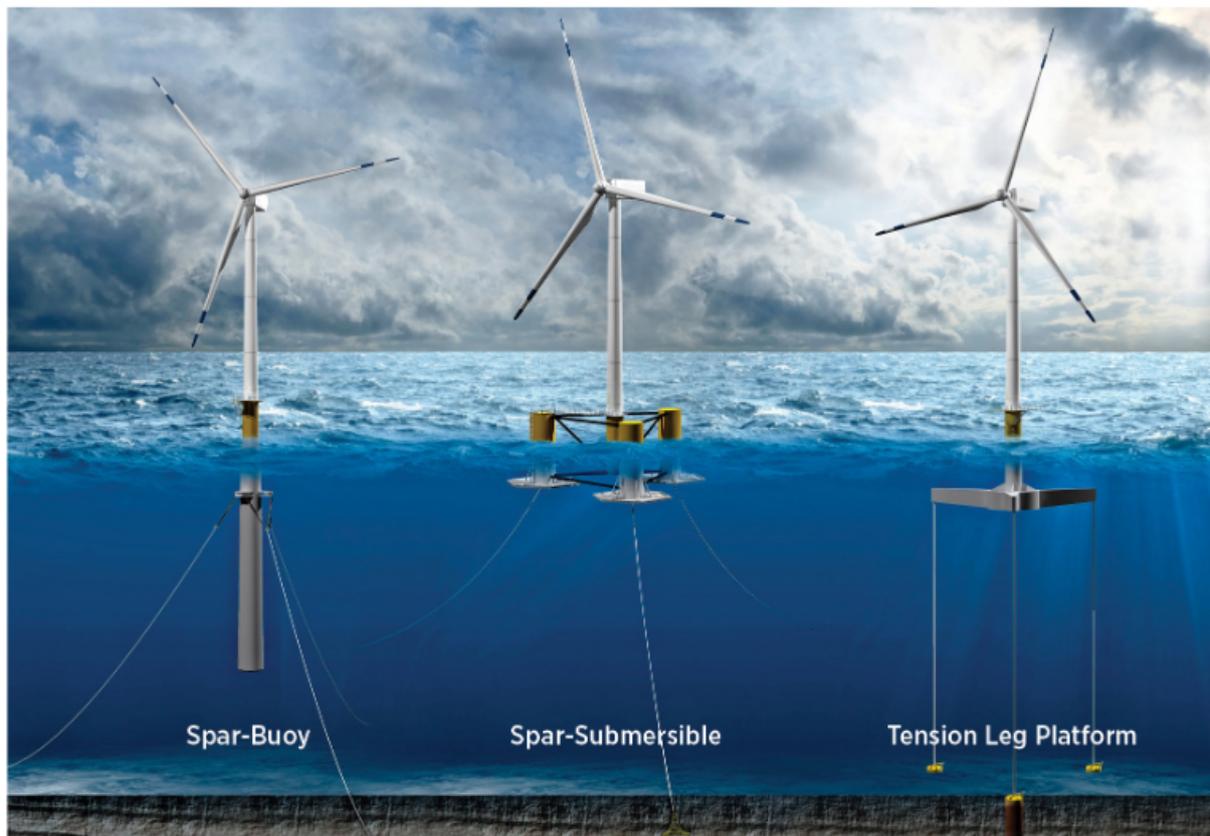
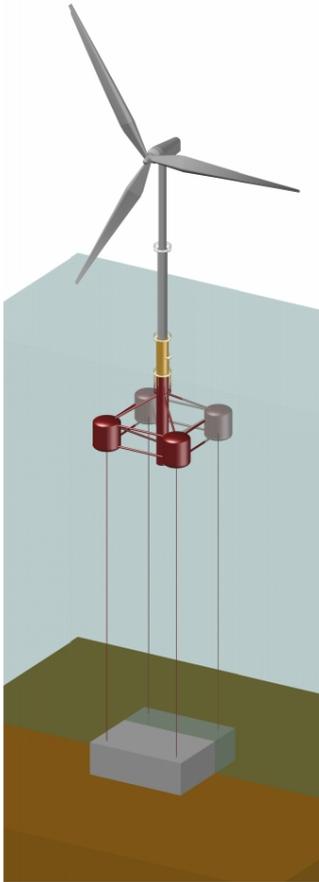


Illustration by Joshua Bauer, National Renewable Energy Laboratory (US Department of Energy)

- **How might the UK take advantage of further technological advances in offshore wind technology, particularly in relation to floating arrays?**



Back in 2001 we patented our tension leg floating offshore wind foundation based on over 30 years of expertise in tension leg Buoys. Even as recently as 2014, a TLP foundation design was already recognised by the Energy Technologies Institute as the most appropriate and lowest LCOE solution for the UK floating offshore wind market, though they did not see fit to support the originator of the concept which was British company. How appalling and what a lost opportunity!

What we need now is support (as defined above) to work updating and rescaling our design and obtaining certification for the latest 10 and 12 MW WTGs.

Our foreign competitors seem to have no trouble in getting support for their floating wind foundation designs from their local countries or the EU, and amazingly, some of their engineering structures that are funded will never be economically attractive.

Without grant support, we have little or no ability as a small UK SME to drive this opportunity further which is urgent now for the imminent UK floating offshore wind market.

We propose a grant competition to offer companies like ourselves real opportunities to develop the technology for floating offshore wind (see comments on last point).

The size of the prize is big, as we have mentioned already, and one that must be won for the UK using appropriate UK government support.