



## Wind turbine trial shows how future could look

BY DOUG MCLEDD

**I**T MAY be my original incarnation as an economist in the oil and gas extraction industry, but I am always attracted to the ‘big stories’ of that industry, the deepest well, the greatest sea depths for drilling wells/setting platforms and so on!

So when fish farmers start talking about escaping from the constraints of operating in sea lochs and bays and heading offshore, I am always interested in the conversation. To date I have been rather disappointed, as the ‘great offshore’ of aquaculture in general appears somewhat limited in scale and ‘offshore-ness’.

I am naturally aware of the difference in financial scale of the international petroleum industry and aquaculture, but there should be some area where they overlap, and common interests appear.

Therefore, my interest was piqued when I read the conclusions of a recent Wood MacKenzie report on forecast decommissioning of North Sea oil and gas production platforms, plugging wells and dismantling pipelines.

Total costs are estimated at some £53 billion over the next four decades, with around £25 billion expected to be recouped from the UK Treasury (you and me as taxpayers) through tax relief.

Nevertheless, the balance of around £28 billion will represent a significant cash flow drain for the companies, and I would expect any opportunity to reduce that expense would be gratefully received.

This is where

“I’m confident that the aquaculture industry can match these innovative offshore concepts”

Left: Brent platform  
Above: WindFloat



aquaculture may be able to offer a helping hand, one that assists exponential development of the offshore fish farming sector.

The production platforms scattered across the North Sea (strategically grouped around the productive areas) are in many cases inert steel and concrete gravity based structures fixed to the seabed – the environmental impact of removing these would far exceed the impacts of leaving them in place.

But left in place, there are many structures which could form the basis for truly offshore aquaculture ventures, either as a basic mooring point for large scale cages (possibly submersible or semi-submersible) or – when within reasonable distance of each other – as the corners of macrocosm cage structures.

The public consultation on the decommissioning of the Brent field will take place this summer – the future-gazing members of the aquaculture industry should examine the details of the proposals and consider whether there are opportunities offered by the proposals to acquire stable platforms for future expansion truly offshore.

Meanwhile, in the offshore wind turbine sector there is additional evidence of constructive, visionary future-thinking.

One of the major costs and efforts of offshore turbine installation has been that the structures have been bottom founded – that is, seabed foundations for the platform and tower- which meant that much of the construction work for structure and installation of the turbine had to take place on site, a costly process.

After a five-year trial, an innovative semi-submersible design, WindFloat, has been successfully tested offshore in Portugal, including a 350 kilometre offshore tow to reach the location, a veritable milestone in the industry’s development. The static and dynamic stability of the design, including an active ballast distribution system, created sufficiently low pitch performance to enable the effective use of commercial scale offshore turbines.

The economics of the trial were assisted by the semi-submersible nature of the structure which enabled onshore assembly of the entire system, including the turbine.

This successful trial – the structure survived waves exceeding 17 metres and winds exceeding 60 knots while delivering 17 gigawatt hours of energy to the ‘local’ grid – has stimulated the design of multi-unit wind farms based on the semi-submersible concept, with a specific project for the offshore Portugal location, which will be the first non-recourse financed floating offshore wind farm in the world.

I’m confident that the aquaculture industry can match the innovative offshore concepts that the petroleum and wind energy sectors have shown. **ff**

