

Briefing: Offshore wind in South West England

May 2007

Introduction

Until now, offshore wind has not featured strongly in the south west's renewable energy plans because it was assumed that the region's seabed is too deep to make the construction of offshore wind turbines technically and economically viable. This assumption is now being challenged by a respected offshore wind developer who has expressed an interest in developing a wind farm off the region's north coast.

The Atlantic Array

Farm Energy, a company set up in Devon in 1988, is currently in the early stages of developing the Atlantic Array, a 1,500 MW offshore wind scheme in the Bristol Channel. The Atlantic Array would be the biggest of its kind in the world and would require up to 350 square kilometres of seabed. It would be situated 20 km from the south west coast at its nearest point, in water depths of up to 50 metres. The power from the scheme would come to a substation in North Devon by sub-sea cable. If the scheme is approved, the first phase would not be commissioned until 2013 at the earliest, and is unlikely to be completed before 2018. Farm Energy is also developing the London Array, a 1000 MW offshore wind farm that has recently been given planning permission in the Thames Estuary.

South West resource

South West England has a number of significant attributes in its favour including high wind speeds, and spare grid capacity. Grid capacity is now a major constraint on the development of offshore wind farms in areas of shallower water such as the Irish Sea and the Wash where the first schemes have been developed. Farm Energy favours the south west because of spare grid capacity without the need to build new substations.

However there are still major challenges to the development of offshore wind in the south west. The main environmental, technical, financial and policy issues are outlined below:

Environmental issues

The environmental benefits of the proposed scheme would be very significant as it would generate very large quantities of carbon free electricity. It is estimated that the Atlantic Array could reduce the carbon footprint of the south west region by approximately 5%.

There are a number of potential local environmental impacts to consider when siting wind turbines offshore, including the potential to disturb seabirds, the impact of construction and operation on the sea bed, and the impact on land of connecting the scheme to the national grid. Each scheme like this requires an individual environmental impact statement but wider issues also need to be considered through a Strategic Environmental Assessment (SEA).

An 'all energy' SEA is being carried out for South West England but it is not yet clear whether government will use it to zone specific areas as being acceptable for offshore wind. This is an essential first step before the Atlantic Array or any other offshore wind proposal can apply to lease the seabed and get consent to develop.

Technical issues

Developing offshore wind in deep water remains technically challenging. Most UK development is currently taking place in water up to 20 metres depth. Farm Energy believes that construction in water depths of 30-50 metres will become feasible over the next five years due to innovations in installation methods. Currently there is an experimental project off the coast of Scotland that is being built in waters 40-50 metres deep at the Beatrice Oil Field by Talisman, but it is costing nearly four times more than it would in shallower waters.

Financial and economic issues

The current economics of offshore wind development are poor, and it is almost twice as expensive as onshore wind. The capital cost of offshore wind has increased recently from approximately one million pounds per megawatt, to 1.6-1.9 million pounds, due to a number of factors but principally due to a steep increase in wind turbine costs. Costs may come down in larger projects where there are economies of scale, but the price paid for offshore wind power production must be increased above current prices for renewable electricity to make these projects financially viable.

Offshore wind costs are expected to be competitive against the other main large scale options for carbon free electricity generation, which are nuclear power and carbon capture and storage from fossil fuel power stations. In the future, offshore wind may receive enhanced revenue payments through the proposed banding of the Renewables Obligation (RO) signalled in the Energy Review. The RO creates a financial incentive for renewable electricity production and some commentators expect the Government to restructure the RO to provide greater incentives for offshore wind.

Offshore wind can have a large local positive economic impact in both construction and operation. The construction cost of the Atlantic Array is predicted to be £3 billion, and it is possible that up to 50% of that expenditure would be UK content, despite the fact that the wind turbines are likely to be imported. Experience from the Scroby Sands wind farm off the East of England was that regional businesses gained around 10% of the value of construction contracts, which if replicated for the south west in the Atlantic Array could result in a regional expenditure of approximately £300 million over the six year construction phase.

Perhaps more significantly, levels of 75% regional content have been achieved for the operation and maintenance (O&M) phase of offshore wind farms, which suggests that the ongoing O&M expenditure in the south west for the Atlantic Array could be approximately £64 million a year.

Policy issues

There are many policy issues that have to be resolved before offshore wind can be developed in the south west.

The Government has to decide to designate the south west as a strategic area for the development of offshore wind, and include the region in a bidding round for leasing of the seabed. It will only do this if a Strategic Environmental Assessment (SEA) shows that development can take place without causing significant environmental damage, and if it is convinced that the wind industry has an appetite for deeper water development.

In this process the Government also has to reconcile the different economic uses of coastal waters, and assess the likely impact of offshore wind on fisheries, dredging and shipping. These issues are resolved through a process of dialogue with consultees in both the SEA and the consents processes.

Offshore wind projects can take ten years from concept to first construction because of their large size and the complexity of the consenting process. This means that uncertainties around the financial incentives for renewables can have a big impact on their viability. The main renewable electricity support mechanism, the Renewables Obligation (RO), currently runs to 2027, but the Atlantic Array will depend on an enhanced revenue stream for up to 10 years after that.

The policy risk around renewables has reduced significantly with the new European Union commitment to generate 20% of its energy from renewables by 2020. This is a challenging aim that could require much higher targets for renewable electricity in the UK.

The current renewable electricity target proposed for the south west in its draft Regional Spatial Strategy is composed of an onshore and offshore renewable

contribution. The offshore target for 2020 is a relatively modest 450 MW, because it was set before it was known that wind development in deeper waters might be feasible. The European 20% renewables target and the change in assumptions about offshore wind in the region suggests that this target should be raised.

Offshore wind will not contribute to the 2010 target for renewable electricity set out in the south west's Regional Planning Guidance, and the existence of a large offshore wind resource cannot be used by planning authorities to refuse permission for onshore renewable generation. Nevertheless there is a risk that offshore wind proposals will be used to challenge policy on onshore wind development. The south west will need to continue to attract and permit onshore wind development for the foreseeable future.

Next steps

The next step is for Government to complete a Strategic Environmental Assessment which specifically assesses the suitability of the south west for offshore wind. The Government then needs to designate the south west as a strategic area for offshore wind and invite bids from development companies to lease the seabed. The developers of schemes that are given a lease then have to get planning consent and to secure finance to construct. At the same time, businesses and regional organisations in the south west have to get ready to secure the maximum economic benefit from offshore wind schemes such as the Atlantic Array, when they do come forward.

For more information contact Cheryl Hiles, Planning and Policy Manager,
Regen SW.

chiles@regensw.co.uk

