

## **Briefing**

# **Opportunities and challenges for offshore wind power in Britain**

**January 2010**

Greenpeace welcomed the announcement on Friday 8th January of a huge expansion of offshore wind power. Ahead of the announcement, Greenpeace Executive Director John Sauven said:

*“Throughout its history Britain has shown the determination and ingenuity to tackle the great industrial challenges of each era. In the 21<sup>st</sup> century these qualities are being called on once again, to enable the transition from fossil fuels to clean, renewable sources of energy.*

*“Our country is home to some of the best engineers, mechanics and construction professionals in the world. Their expertise will be crucial if we are to harness the massive potential that new technologies like offshore wind have to offer.*

*“The Government’s role is clear. Train and equip Britain’s workforce to ensure that the thousands of jobs that will be created are filled by workers in Britain, and provide the economic certainty investors need to complete these projects on time and on budget. The economic and environmental benefits are huge, but unless we make the most of this momentous opportunity, others will.”*

### **Assessment of the announcement**

The Crown Estate’s Round Three offshore wind announcement is expected to represent a huge opportunity to secure a clean domestic energy future. A vast programme of wind farm construction is expected to begin in 2014 and accelerate up to 2020. It will help meet Britain’s EU commitment to produce 15 per cent of energy from renewable sources by 2020 – up from nearly 2 per cent today.

The British Wind Energy Association estimates that there are 5,000 people currently employed in Britain in the wind industry. According to the Carbon Trust, this programme could create up to 70,000 jobs in project planning, fabrication, installation, operations maintenance and associated activities.<sup>1</sup>

Britain is currently the world leader in deployment of offshore wind with more projects installed, in planning and in construction than any other country in the world. There are currently 228 offshore wind turbines with an installed capacity of 688MW, with a further

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1407 in construction and approved, totalling 4598MW.<sup>2</sup> The Round Three projects are expected to build 1 6,400 additional turbines.

A step change in Government intervention and industry engagement will now be needed to secure the expected £100bn investment needed to deliver the projects and maximise the benefits for Britain. If this is achieved, the Crown Estate's Round Three offshore wind projects should enable Britain to maintain its lead in offshore wind deployment where it has so far not succeeded in onshore wind. Vestas' decision in July 2009 to pull out of onshore wind turbine manufacture on the Isle of Wight followed years of planning and other obstructions which were allowed to hold back domestic demand.

The fluctuating power from wind farms is predictable will be considerably smoothed out by the nationwide distribution of these projects. Wind power can be backed up with gas power on the few occasions when wind speeds are low across Britain. The National Grid and energy experts worldwide agree that variable wind power can be managed. A review of evidence on managing wind variability can be found [here](#). The development of smart meters in Britain and the European 'supergrid' announced this week will further facilitate the management of fluctuating renewable energy.

The Government's advisors the Committee on Climate Change say that wind is a desirable technology as it is zero carbon, it is 'tried and tested' and available to deploy now, it is also available at reasonable cost in comparison to other technologies.<sup>3</sup> Ofgem research shows that as the economy recovers, the best way to secure Britain's energy future while minimising price rises for consumers is to invest in renewables and energy efficiency.<sup>4</sup> Lord Stern made clear in his 2007 Review of the Economics of Climate Change that the cost of inaction on climate change could be up to twenty times higher than the cost of taking effective action now.<sup>5</sup>

### **Strong global market**

The pressing need to avert catastrophic climate change and ensure security of energy supplies is driving a global transformation in energy production. In 2008, for the first time, more was invested in sustainable than conventional energy production worldwide at \$155 billion. Wind power attracted the highest new investment of any energy technology at \$51.8 billion. The progress has been largely driven by China, the USA and European Union. Germany, Denmark and Japan have invested heavily in research and development to make Siemens, Vestas and Mitsubishi world leaders in the manufacture of onshore wind turbines. A key task will be to build a supply chain in Britain capable of winning the contracts for constructing offshore wind turbines for this huge British project and large scale projects also being planned off Germany, France and the Netherlands.

### **Increasing the pace of instalment**

The 2008 Climate Change Act commits Britain to reducing its emissions by 80 per cent by 2050. This requires a rapid advance in the rate at which we improve our energy efficiency and invest in renewable energy. This is beginning to happen. The BWEA calculates that 4 gigawatts of wind power is currently installed in the UK. The latest 1GW of capacity was

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<sup>2</sup> <http://www.bwea.com/media/news/articles/pr20091210.html>

<sup>3</sup> <http://www.theccc.org.uk/sectors/power/wind>

<sup>4</sup> [http://www.ofgem.gov.uk/Media/PressRel/Documents1/Ofgem%20-%20Discovery%20-%20PR8%20\(2\).pdf](http://www.ofgem.gov.uk/Media/PressRel/Documents1/Ofgem%20-%20Discovery%20-%20PR8%20(2).pdf)

<sup>5</sup> [http://www.hm-treasury.gov.uk/sternreview\\_index.htm](http://www.hm-treasury.gov.uk/sternreview_index.htm)

installed in less than a year. This compares to 14 years to deliver the first GW in 2005, 20 months to the 2nd GW and a year and a half to the 3rd. Industry experts predict that next year will see the installation of both the 5th and the 6th GW in quick succession.<sup>6</sup>

The pace of renewables installation is challenging but achievable. The Government's advisory body the Committee on Climate Change calculates that the pace of deployment needed is similar to the average achieved in Germany over the last ten years and less ambitious than that achieved in Spain.

### **Achieving maximum benefit to Britain at minimum cost**

The economic opportunities of the transition to a low carbon energy system are huge if the appropriate investment is made now. Britain is well placed to benefit from a new export industry in wind power. The country has one of the windiest coastlines in Europe and world class engineering and offshore skills from North Sea oil and gas industries. The Carbon Trust calculates that the UK could seize 45% of the global offshore wind market by 2020, delivering £65 billion of net economic value and 220,000 total jobs by 2050.<sup>7</sup>

In order to maximise the jobs and income potential of offshore wind for Britain, significant Government intervention is needed now to develop the technology for domestic use and export and ensure the turbines are manufactured in Britain rather than imported. The Carbon Trust argues that a comprehensive package of technology focused support is needed including investment of up to £600 million in R&D, removal of regulatory barriers and new incentive mechanisms to overcome investment barriers and secure inward investment from component manufacturers.

Without this additional support to develop the manufacturing base in Britain, much of the investment will be spent abroad as is happening with the worlds biggest wind farm the London Array, off the coast of Kent.

### **Incentives for investment**

In the Pre-Budget Report the Government extended the period of time until 2014 that offshore wind projects can receive additional returns for energy generation through the Renewable Obligation Certificates (ROCs) scheme. This was instrumental in unblocking progress on the huge London Array offshore wind development.

### **Reducing investment risk**

The technical risk and costs associated with offshore wind power can be significantly reduced by coordinated investment in research, development and demonstration. A significant increase in public investment in research and development is needed to achieve the potential cost savings. The Carbon Trust calculates that up to £0.6bn of public and £1.2bn of private research, development and demonstration investment could reduce the investment required by up to £14bn.<sup>8</sup> The Carbon Trust is supporting this through its Offshore Wind Accelerator fund to catalyse a ten per cent reduction in the cost of offshore wind power.

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<sup>6</sup> <http://www.bwea.com/media/news/articles/pr20091020.html>

<sup>7</sup> [http://www.carbontrust.co.uk/news/news/press-centre/2009/Pages/020709\\_CleanTechRevolution.aspx](http://www.carbontrust.co.uk/news/news/press-centre/2009/Pages/020709_CleanTechRevolution.aspx)

<sup>8</sup>

[http://www.bsdlive.co.uk/Journals/Builder\\_Group/Building\\_Services\\_Journal/October\\_2008/attachments/Carbon%20Trust%20wind%20farm%20report.pdf](http://www.bsdlive.co.uk/Journals/Builder_Group/Building_Services_Journal/October_2008/attachments/Carbon%20Trust%20wind%20farm%20report.pdf)

The collapse in private investment resulting from the global economic crisis has made credit hard to secure and capital costs high. Government intervention is needed to underwrite and facilitate cheaper debt and to accelerate deployment. More effective private sector collaboration to share risk across consortia could significantly help. A national green investment bank to coordinate investment efforts and renewables investment expertise could help make Britain attractive for inward investment.

### **Offshore development hubs**

Other countries such as Germany and Denmark have been able to advance their renewables industries by actively intervening to encourage the development of clusters of industrial activity to make inward investment by component manufacturers more attractive. The Government's announcement of a South West low-carbon economic area in July 2009 was an important advance in this direction, albeit without the scale of financial Government support needed to demonstrate genuine intent to kick-start a low carbon industrial supply chain. Apart, from increased public finance, additional hubs are needed now where ports can be cleared for large turbine and foundation manufacturers and research development and testing facilities. Local training centres, transport links and grid connections all need to be available within a concentrated area.

### **Access to the national grid**

Access to the electricity transmission network now needs to be improved to overcome a backlog of connections from renewable energy projects and encourage further investments. Currently 17GW of renewable energy is waiting to be connected to the grid, which is a result of the existing 'first come first served' model. The Government is currently consulting on 'Improving Grid Access' for new generators and Greenpeace is calling on the Government to increase investment in the transmission system to facilitate preferential and rapid connection of what will be a hugely expanded renewable energy capacity.