The Changing Climate for Wind Power

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Climate change, coupled with technological progress, has been the core driver for wind energy over the past decade or more. The political framework for the industry has largely been based on the suite of policies enacted to tackle climate change following the first Kyoto Protocol meeting in 1997.

With the protracted debate over the fate of Kyoto now settled, progress is being made at a political level. The European Spring Council meeting in March adopted the target for a 15-30% cut in greenhouse gas emissions by 2020 and, for the first time, backed the goal that global temperatures should not be allowed to rise to more than two degrees centigrade above pre-industrial levels.

The key role of renewable energies like wind power in tackling climate change is acknowledged. The recent European Environment Agency (EEA) assessment on greenhouse gas emission trends in *Europe, for example, concluded that "the promotion of renewable energy has the greatest impact on emissions in most EU Member States for both implemented and planned policies"*. In January, as the UK government prioritised climate change for both its G8 and EU Presidencies, the International Climate Change Taskforce concluded that G8 governments should *"generate at least 25% of electricity from renewable energy sources by 2025"*. And the European Commission report "Action on Climate Change post-2012", published in February, stated that *"renewable energies will have to play a much larger role in the future"*.

Carbon saving

Wind power installed in Europe today is already saving over 50 million tonnes of Co_2 every year, and is on course to save more than 100 million tonnes by 2010. This would deliver more than 30% of the EU's total Kyoto obligation. In terms of carbon delivery, wind energy is outperforming many other proposed solutions.

It might therefore seem logical that as climate change moves up the agenda, wind energy automatically does too. This is true up to a point, but not the whole story. The competition for climate change solutions is becoming more crowded, with an increasing number of competitor technologies and policy solutions on offer.

In 2001, the European Commission listed 42 cost-effective reduction options, among which the EEA then identified six of the most promising: renewables was number 1. According to the latest European Commission report on climate change, fifteen technology choices could each make a similar contribution to reducing carbon dioxide emissions. As well as wind power and other renewables, the list includes forest management, storage of carbon and nuclear fission.

It is a widely stated truism that there is no silver bullet in the quest for climate solutions. However some bullets pack a deadlier punch; wind energy is an advanced technology, whereas other proposals, such as carbon sequestration or a new family of nuclear fission reactors, have yet to enter the serious research phase, and are years or decades from market credibility.

Emissions trading

Emissions trading, on the other hand, will not give a short term boost to wind energy. The price of a CO_2 allowance is unlikely to ever reflect the external costs associated with the pollution and emissions of conventional power. Because allowances are allocated for free to existing polluters, most carbon based electricity is not covered. The cost of an emission allowance applies to the marginal unit of electricity, raising the market price for all kWh produced. So fossil power producers will receive the higher price for each kWh they produce but costs for emitting CO_2 will only apply to the very small share of kWh that does not benefit from free allocation. One estimate says that this will result in profits for power generators of €11-12 billion per year. Auctioning all carbon credits is the only fair market way to allocate costs.

The International Energy Agency estimates that the EU will need to build 766 GW of power stations by 2030 in order to cover new demand and for replacement of older generation. The investment choices made now will determine the level of emissions of carbon dioxide for many decades. PricewaterhouseCoopers' recent survey of utilities reveals that 81% of respondents found that the 'encouragement of renewable energy' tops the agenda of issues that will most concern the sector over the next five years. Wind power is cited as the main renewable growth option in the short term.

So as a power technology which can cut carbon and help to meet growing electricity demand, wind energy is a leading candidate. Wind power is one of the few energy supply technologies that has the maturity, clout and global muscle to deliver deep cuts in CO_2. Meanwhile, the competition for climate change solutions - like the earth's climate - is hotting up. Wind energy needs to remain at the forefront of technical and policy innovations.