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An ill wind blows for Denmark's green energy revolution

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Last month, unnoticed in the UK, Denmark's giant state-owned power company, Dong Energy, announced that it would abandon future onshore wind farms in the country. "Every time we were building onshore, the public reacts in a negative way and we had a lot of criticism from neighbours," said a spokesman for the company. "Now we are putting all our efforts into offshore windfarms."

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Even as parts of the British Government continues to blow hard for wind, other countries seem to be cooling on the idea. This summer, France brought in new restrictions on wind power which will, according to the French wind lobby, jeopardise more than a quarter of the country's planned windfarm projects.

According to the latest Wind Turbine Price Index, produced by Bloomberg New Energy Finance, world prices for new wind turbines are down by 15 per cent on their 2008 peak amid a sharp slump in European and global demand. William Young, manager of Bloomberg's Wind Insight Service, says: "Expectations for turbine prices have never been so low, and the

current market oversupply will continue for quite a while longer."

But it is in Denmark, the great windfarm pioneer, where some of the most interesting changes are taking shape. In 1980, the Danish government was Europe's first to bring in large-scale subsidies - on which, just as in Britain, the wind industry depends. The results have been dramatic. According to the Danish Wind Energy Association, there are more than four thousand onshore turbines – two-thirds more than Britain - in a country a fifth the size. Nowhere else has more turbines per head, and Denmark is also a global centre of wind turbine manufacturing – with Vestas, the world's leading turbine firm, based in the country.

Unfortunately, Danish electricity bills have been almost as dramatically affected as the Danish landscape. Thanks in part to the windfarm subsidies, Danes pay some of Europe's highest energy tariffs – on average, more than twice those in Britain. Under public pressure, Denmark's ruling Left Party is curbing the handouts to the wind industry. "Since 2005 alone, 5.1 billion kroner [£621 million] has been paid to the wind turbine owners. That cost has been borne by businesses and private consumers," says the party's environment spokesman, Lars Christian Lilleholt. "It seems to have become a political fashion to say that there should be more support for wind. But we have to look at other renewables. We cannot go on with wind power only."

The subsidy cuts are almost certainly the main reason behind Dong's move out of onshore wind. But public anger is real enough, too. Until recently, there was relatively little opposition to the windmills. But now a threshold appears to have been crossed. Earlier this year, a new national anti-wind body, Neighbours of Large Wind Turbines, was created. More than 40 civic groups have become members.

"People are fed up with having their property devalued and sleep ruined by noise from large wind turbines," says the association's president, Boye Jensen Odsherred. "We receive constant calls from civic groups that want to join."

In one typical battle, in the central city of Svendborg, the local council set height and number limits on turbines under heavy pressure from locals. "The violent protests and the uncertainty about low-frequency noise means that right now we will not expose our citizens to large windmills," said the deputy mayor, Lars Erik Hornemann.

There has also been growing scrutiny of the wind industry's macro claims. Though wind may indeed generate an amount of electricity equal to about a fifth of Danes' needs, most of that electricity cannot actually be used in Denmark.

Except with hydropower, electricity cannot be stored in large quantities. The power companies have to generate it at the moment you need to use it. But wind's key disadvantage – in Denmark, as elsewhere – is its unpredictability and uncontrollability. Most of the time, the wind does not blow at the right speeds to generate electricity. And even when it does, that is often at times when little electricity is needed – in the middle of the night, for instance.

So most of the wind electricity Denmark generates has to be exported, through interconnection cables - to Germany, to balance the fluctuations in that country's own wind carpet, or to Sweden and Norway, whose entire power system is hydroelectric, and where it can be stored. (The Swedes and Norwegians use it themselves - or sell it back, at a profit, to the Danes. If they use it themselves, there is, of course, no saving whatever of CO₂ – because all Norway and Sweden's domestically-generated hydropower is carbon-neutral anyway.)

"I would interpret the [export] data as showing that the Danes rely on their fossil-fuel plants for their everyday needs," says John Constable, research director for the London-based Renewable Energy Foundation, which has commissioned detailed research on the Danish experience. "They don't get 20 per cent of their electricity from wind. The truth is that a much larger unit, consisting of Denmark and Germany, has managed to get about 7 per cent – and that only because of a fortuitous link with Norwegian and Swedish hydropower."

Britain, meanwhile, almost certainly could not manage even that. "Our system is totally different," says Constable. "We are an island grid. We have virtually no interconnectors with other countries, only a very limited amount of hydro, and the British Government simply doesn't know how to integrate the very large fleets of wind turbines that they are blithely introducing. It's a leap in the dark."

Britain will almost certainly, in fact, end up having to build as many new fossil-fuelled power stations as it would have done without windfarms, to provide covering power for the fluctuations of the wind.

Apparently oblivious to all this, the Government's climate change watchdog, the Committee on Climate Change, continues to praise Denmark's example and only last week demanded the building of 10,000 more onshore wind turbines to help meet a Whitehall target that 30 per cent of Britain's electricity should be generated from renewables by the end of the decade. This goal (the current figure is 4 per cent) is politely described as "optimistic" by the National Audit Office; privately, most observers view it as total fantasy.

Interestingly, however, Chris Huhne, the previously anti-nuclear, pro-wind Energy Secretary, appears to be undergoing a mood shift. There is still much government talk of offshore wind, but he has sounded a more emollient note on a new generation of nuclear stations.

"I think there's an outbreak of realism," says Constable. "Wind is not a bad technology. It's just a lot more limited than people thought in the past." Denmark, of course, was also the place where UN efforts to reach an overarching climate deal collapsed in acrimony last year. The country appears to be developing a habit of puncturing greens' wilder hopes.