

# A REBUTTAL FOR SEEKERS OF THE TRUTH of the British Wind Energy Association's TOP MYTHS ABOUT WIND ENERGY

The BWEA published what it called the 'Top Myths about Wind Energy' (1-15) and what it claimed were the true 'facts'. These are still on its web site where they are trotted out by green organisations in defence of wind farms. Below, we provide a set of independent comments which show how the BWEA has been selective in its answers and economic with the truth.

Readers should be aware that the BWEA is not an academic or philanthropic body looking after the interests of the Earth and the British people. It is a trade body with over 500 member companies, all of whom seek to make profits from renewables, especially wind farms. While there is nothing wrong with this, it does mean that the BWEA are not a neutral body and are, therefore, most likely to provide partial information that is most likely to further their member's profits and interests rather than promote the truth.

**NOTE: The original references cited by the BWEA are at the end numbered 1-18 while those cited by us are shown as footnotes.**

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## 1. **Myth: Tens of thousands of wind turbines will be cluttering the British countryside**

**Fact:** Government legislation requires that by 2010, 10% of electricity supply must come from renewable sources. Wind power is currently the most cost effective renewable energy technology in a position to help do that. Around 3,500 additional modern wind turbines are all that would be needed to deliver 8% of the UK's electricity by 2010, roughly 2,000 onshore and 1,500 offshore.

**INDEPENDENT COMMENT:** The 3,500 turbines are ADDITIONAL (as stated) which would bring the total to 5,500 in the UK by 2010. However, the Government wants 20% by 2020 – or another 5,500 turbines on the BWEA's calculations. In addition, to reach the EU's target of 20% of ALL energy by 2020 would require 40% of electricity to come from renewables because such large savings in other sectors such as air transport, railways and vehicles is impossible. That would rack the number up to 22,000 turbines!

On December 10<sup>th</sup> 2007, John Hutton MP suggested we build 7,000 5MW wind turbines round the coast of Britain by 2020<sup>1</sup>. As there are only around 4,000 days left until then, that means two a day for the next 12 years! How crazy can politicians get. He is talking about structures nearing the size of Blackpool tower to be erected in a hostile sea where work is only possible 5-6 months of the year. This must be one of the most ludicrous political blusters of all time. This aim was reaffirmed in a press release from the Crown Estate<sup>2</sup> which marked the launch of round 3 of off-shore wind farm licensing for 25GW, bringing the total to 33GW by 2020.

To replace our nuclear power stations alone with wind turbines would take between 10,000 and 15,000 turbines<sup>3</sup>. In fact any number of wind turbines could only produce electricity when

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<sup>1</sup> See Rob Johnson at <http://www.spiked-online.com/index.php?/site/article/4173/>

<sup>2</sup> The Crown Estate press release, 4<sup>th</sup> June 2008

<sup>3</sup> Lord Sainsbury of Turville. House of Lords Hansard, 18/03/2003, Reference 231118-02

the wind blew and are incapable of delivering base load power which is provided mostly by nuclear power stations.

## 2 **Myth: Wind farms won't help climate change**

**Fact:** Wind power is a clean, renewable source of energy which produces no greenhouse gas emissions or waste products. The UK currently emits 560 million tonnes of carbon dioxide (CO<sub>2</sub>), the key greenhouse gas culprit, every year and the Government target is to cut this by 60% by 2050<sup>1</sup>. Power stations are the largest contributor to carbon emissions, producing 170 million tonnes of CO<sub>2</sub> each year<sup>2</sup>. We need to switch to forms of energy that do not produce CO<sub>2</sub>. Just one modern wind turbine will save over 4,000 tonnes of CO<sub>2</sub> emissions annually<sup>3</sup>.

**INDEPENDENT COMMENT:** We agree that at the point of generation wind power produces no CO<sub>2</sub> and is renewable. However, wind will only **save** significant amounts of CO<sub>2</sub> if it leads to the shut down coal or gas-fired power stations. But because of its intermittency (i.e. when the wind does not blow or blows at a speed below peak power provision) this cannot happen to any significant extent and some back-up power stations have to be kept at the ready either as 'hot spinning reserve' which can take over at 5 minutes notice, or as 'standby' which needs warming and several hours notice before it is available.

One modern 1.8MW turbine will NOT save over 4,000 tonnes of CO<sub>2</sub> emission a year. This figure has been arrived at by multiplying the electricity generated by a CO<sub>2</sub> 'savings factor' of 0.86 tonnes per megawatt hour (MWh). This figure is no longer accepted by the Government, the Carbon Trust, Ofgem (the electricity regulator), DEFRA, or the Department of Business Enterprise and Regulatory Reform (formerly the DTI). Most of these organisations now use a 'savings factor' of 0.45t/MWh though press releases from the Energy Minister are now using 0.37t/MWh. This reduces the 'savings' from 4,068 tonnes to either 2,128 tonnes (0.45 factor) or 1,750 tonnes (0.37 factor). In reality it is even less than this after the CO<sub>2</sub> released in manufacturing, erecting, maintaining, turbines and making allowance for the hot spinning reserve or standby power are deducted.

Notably the Advertising Standards Authority (ASA) has upheld complaints against wind farm companies on several occasions, finding them guilty of misrepresentating the CO<sub>2</sub> savings when they use the figure of 0.86t/MWh. The wind energy industry knows it is guilty as it effectively acknowledged this in a recent industry publication<sup>4</sup> and specifically on the BWEA's web site where it committed itself to the agreement of new figures with the ASA<sup>5</sup>.

## 3. **Myth: Building a wind farm takes more energy than it ever makes**

**Fact:** The average wind farm will pay back the energy used in its manufacture within 3-5 months of operation<sup>4</sup>. This compares favourably with coal or nuclear power stations, which take about six months. A modern wind turbine is designed to operate for more than 20 years and at the end of its working life, the area can be restored at low financial and environmental costs. Wind energy is a form of development which is essentially reversible – in contrast to fossil fuel or nuclear power stations.

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<sup>4</sup> *Winds carbon claims 'wrong'*, RE News, 11<sup>th</sup> October 2007, page 1.

<sup>5</sup> See Press Release at <http://www.bwea.com/media/news/071015.html>

**INDEPENDENT COMMENT:** Reference 4 quoted above is a paper by Milborrow who used to work for the BWEA. A graph in that paper compares the pay back time of several forms of electricity generation. Wind power is shown as a minimum time of about 4 months and a range up to 34 months. This is at variance with the House of Lords Science and Technology Committee Report which used figures of 1 to 3 years. The reason for this wide range is not clear but the higher figures probably include a component for transportation of the turbines by sea and lorry and mining iron ore for steel manufacture. However, figures very much higher than 3 years can occur if a wind farm is built on peat soil where there is significant release of CO<sub>2</sub> from peat damaged during draining of the site and road construction. This is now a major concern in both Scotland and the EU and is one of the reasons that the Isle of Lewis wind farm was turned down in early 2008<sup>6</sup>.

We agree that a modern wind turbine can be removed after 25 years much more easily than a nuclear power station. However, it is more likely that they will not be removed at all but will be repowered (i.e. old turbines removed and replaced by even larger ones as has happened already at some locations such as Caton Moor in Lancashire). Further, the footprint of visual landscape damage by wind farms spreads over hundreds of square kilometers compared to just a few for conventional power stations.

#### 4. **Myth: Wind farms are inefficient and only work 30% of the time**

**Fact:** A modern wind turbine produces electricity 70-85% of the time, but it generates different outputs depending on the wind speed. Over the course of a year, it will typically generate about 30% of the theoretical maximum output. This is known as its load factor. The load factor of conventional power stations is on average 50%<sup>5</sup>. A modern wind turbine will generate enough to meet the electricity demands of more than a thousand homes over the course of a year.

**INDEPENDENT COMMENT:** Many people campaigning against wind farms confuse the 30% load factor with the amount of time for which a wind turbine produces some electricity (70 to 85%).

So in this case, the BWEA are right but, as usual, fail to tell the whole truth. They do not explain that based on the wind speed frequency in the UK<sup>7</sup> and the power curve for a 2.5MW turbine<sup>8</sup>, wind farms will generate **nothing at all** on 15 to 30% of the days. This translates to 55 to 110 days a year depending on the windiness of the site. Even worse, for 110 to over 250 day a year the power output will be less than 25% of the installed capacity. For all those days coal or gas fired power stations will have to provide the electricity using spinning reserve or back-up power stations. The **only** renewables that can give near 100% availability are hydroelectricity and biomass, though the latter has other serious environmental and social problems associated with it.

#### 5. **Myth: Wind energy needs back-up to work**

**Fact:** All forms of power generation require back up and no energy technology can be relied upon 100%. The UK's transmission system already operates with enough back-up to manage

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<sup>6</sup> *Scottish government halts Lewis wind farm plans.* The Scotsman, 21/04/2008

<sup>7</sup> Godfrey Boyle, *Renewable Energy: Power for a Sustainable Future*, Publ by Oxford University Press, Figure 7.30

<sup>8</sup> G Sinden, *Wind Power and the UK Wind Resource*, Table 1. Environmental Change Institute, Oxford University

the instantaneous loss of a large power station. Variations in the output from wind farms are barely noticeable over and above the normal fluctuation in supply and demand, seen when the nation's workforce goes home, or if lightning brings down a high-voltage transmission line. Therefore, at present there is no need for additional back-up because of wind energy. Even for wind power to provide 10% of our nation's electricity needs, only a small amount of additional conventional back-up would be required, in the region of 300-500 megawatts (MW). This would add only 0.2 pence per kilowatt hour to the generation cost of wind energy and would not in any way threaten the security of our grid<sup>6</sup>. In fact, this is unlikely to become a significant issue until wind generates over 20% of total electricity supply.

**INDEPENDENT COMMENT:** The BWEA are largely correct – our Grid system has to have back-up whether we have wind farms or not. The amount of back-up has varied in recent years to as much as 25% of our peak requirements but is now about 15% due to the closure of many older plants. However, a strong case has been made out<sup>9</sup> that once electricity from wind power reaches 15% of our needs (it is currently between 1 and 2%) or about 15 gigawatts the National Grid will be destabilized and there will be frequent blackouts. Paradoxically, as the Oxford economist Dieter Helm, has pointed out, we may need to build more conventional power stations to allow us to have ‘windmills’. According to Paul Golby (Eon UK’s Chief Executive) it would take 50 gigawatts of renewable electricity generation to meet the EU’s 2020 target. This would require up to 90% of this amount as backup from coal and gas plants to ensure supply when intermittent renewable supplies were not available. That would push Britain's installed power base up by a massive 44GW from the existing 76 gigawatts to 120 gigawatts at astronomical cost<sup>10</sup>.

## 6. Myth: Installing wind farms will never shut down power stations

**Fact:** The simple fact is that power plants in the UK are being shut down, either through European legislation on emissions or sheer old age. We need to act now to find replacement power sources: wind is an abundant resource, indigenous to the UK and therefore has a vital role to play in the new energy portfolio.

**INDEPENDENT COMMENT:** In May 2007 the UK had 18 coal, 49 gas, 10 nuclear<sup>11</sup>, and 81 hydroelectric and pumped storage power stations and about 40 burning waste, oil or diesel<sup>12</sup>. Of course these numbers change as old stations are scrapped and new ones built, for example in January 2008 the UK had 5 new gas-fired power stations under construction, 3 approved at planning and 7 awaiting approval<sup>13</sup>. However, wind farms can never lead to the closure of a polluting power station because the more wind that is installed the MORE back-up conventional power stations are needed – NOT LESS – see previous ‘Myth’. This is because wind is entirely unreliable (termed undespatchable by the Government as it is not available on demand but only when it is windy). This was confirmed recently<sup>14</sup> when Christopher Barton (Director of the UK Renewables Energy Strategy Project) said, ‘...the intermittency issue is not an insurmountable one, albeit that surmounting the problem comes at a cost so, for

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<sup>9</sup> Hugh Sharman. *Why UK wind should not exceed 10GW*. Civil Engineering, 158, pp161-169, 2005

<sup>10</sup> Mark Milner, *Eon warns over back-up for renewables*, quoting Paul Golby in The Guardian, June 4<sup>th</sup> 2008

<sup>11</sup> At this time coal, gas, nuclear and oil produced 37%, 36%, 18%, and 1% of our electricity respectively

<sup>12</sup> Digest of UK Energy Statistics, 2007. Dept. of Business Enterprise & Regulatory Reform, Table 5.11

<sup>13</sup> Lord Bach in a House of Lords debate on Energy: Electricity Generation, 31.1.2008

<sup>14</sup> House of Lords Select Committee, INQUIRY INTO THE EU’S 20% RENEWABLE ENERGY TARGET, Monday March 17<sup>th</sup> 2008, Question 12, pages 8-9 in uncorrected draft

*example, there will need to be greater overall generation capacity in the UK as you introduce more intermittent generation...’ [i.e. wind]. There you have it; the chief claim of wind protagonists that wind allows you to close dirty coal and gas to save CO2 is not supported.*

## **7. Myth: Wind power is expensive**

**Fact:** The cost of generating electricity from wind has fallen dramatically over the past few years. Between 1990 and 2002, world wind energy capacity doubled every three years and with every doubling prices fell by 15%<sup>7</sup>. Wind energy is competitive with new coal and new nuclear capacity, even before any environmental costs of fossil fuel and nuclear generation<sup>8</sup> are taken into account. The average cost of generating electricity from onshore wind is now around 3-4p per kilowatt hour, competitive with new coal (2.5-4.5p) and cheaper than new nuclear (4-7p)<sup>9</sup>. As gas prices increase and wind power costs fall – both of which are very likely – wind becomes even more competitive, so much so that some time after 2010 wind should challenge gas as the lowest cost power source.

Furthermore, the wind is a free and widely available fuel source, therefore once the wind farm is in place, there are no fuel or waste related costs.

**INDEPENDENT COMMENT:** The above answer is largely correct. With the recent sharp rises in coal and gas prices (which are linked to the oil price) wind power has become much more competitive. It also benefits because the fuel (wind) is free and is not linked to international market trends. However, wind-generated electricity still receives a substantial subsidy in the form of one Renewable Obligation Certificate (ROC) for each megawatt hour generated. This ROC can be sold to the highest bidder, most likely to be one of the big power companies. Ofgem recently stated that wind companies could now make as much as £100 per MWh compared with conventional generation (coal, gas) which can only make around £35/MWh. These additional prices for wind-generated power are added to the household bills of consumers. ALL consumers are paying this premium which has reached over £1.1 billion a year already. Green tariff subscribers who think they are saving the planet are not paying anywhere near the value of the electricity they are using – we subsidise it. Notably, Denmark has almost the highest electricity costs despite have 6,000 wind turbines capable of generating up to 20% of its peak demand when the wind blows.

## **8. Myth: The UK should invest in other renewable energy technologies and energy efficiency instead of wind power**

**Fact:** Wind energy's role in combating climate change is not a matter of either/or. The UK will need a mix of new and existing renewable energy technologies and energy efficiency measures, and as quickly as possible. Significant amounts of investment have been allocated for wave and tidal energy development, and these technologies, along with solar and biomass energy, will have an important role in the UK's future energy mix. However, wind energy is the most cost effective renewable energy technology available to generate clean electricity and help combat climate change right now. Furthermore, developing a strong wind industry will facilitate other renewable technologies which have not reached commercialisation yet, accumulating valuable experience in dealing with issues such as grid connection, supply chain and finance.

**INDEPENDENT COMMENT:** Yes the UK should be doing much more to help other renewables develop but all, including wind, can play little part in combating climate change –

now or in the future. Also they will contribute even less as our generation mix becomes cleaner (e.g. nuclear, gas, coal with carbon capture and storage) – see note on Question 2. If CO2 really is driving climate change then there are much better ways of dealing with it than destroying our most valued landscapes. For example, homes generate 84 million tonnes of CO2 a year. If each of us saved 10% of our power (not a lot to ask) that would amount to 8.4 million tonnes. The entire Government target for electricity from renewables by 2010 is a saving of 9.2 million tonnes. So we could save it all with not a wind turbine in sight. The UK has also saved 10.6 million tonnes in 2007 by switching from coal to gas generation and by using less fossil fuel in our homes and industry<sup>15</sup> - again exceeding our 2010 target.

The BWEA are engaging in wishful thinking when they say there has been significant investment in other renewables. The amounts are but a drop in the ocean compared to what is needed and wind energy may be the most cost effective but it is the best of a very dismal lot. All renewables have problems of intermittency and can never be relied upon when needed. Even the Government says they are ‘non-dispatchable’ – which means not available on demand.

With new initiatives for home and business insulation, improved efficiency of the engines in cars and lorries, better public transport, and so on we can save all the CO2 necessary without resorting to wind farms.

#### **9. Myth: Wind farms should all be put out at sea**

**Fact:** We will need a mix of both onshore and offshore wind energy to meet the UK's challenging targets on climate change. At present, onshore wind is more economical than development offshore. However, more offshore wind farms are now under construction, with the first of the large-scale projects operational at the end of 2003, and prices will fall as the industry gains more experience. Furthermore, offshore wind farms take longer to develop, as the sea is inherently a more hostile environment. To expect offshore to be the only form of wind generation allowed would therefore be to condemn us to missing our renewable energy targets and commitment to tackle climate change.

**INDEPENDENT COMMENT:** Once again the first sentence is wrong as wind farms (whether on- or off-shore) will do almost nothing to combat climate change. So the argument as to where they should be is irrelevant. Having said that, off-shore wind turbines are about twice as expensive as those on-shore (about £2.5 million per MW offshore compared to £1.25 per MW onshore). This no doubt contributed to Shell's decision to pull out of the huge Thames Array wind farm<sup>16</sup>.

#### **10. Myth: Wind farms are ugly and unpopular**

**Fact:** Beauty is in the eye of the beholder, and whether you think a wind turbine is attractive or not will always be your personal opinion. However, studies regularly show that most people find turbines an interesting feature of the landscape<sup>10</sup>. On average 80% of the public support wind energy, less than 10% are against it, with the remainder undecided. Surveys conducted since the early 1990's across the country near existing wind farms have consistently found that

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<sup>15</sup> DEFRA Press Release, *2007 greenhouse gas emissions, provisional figures*, March 27<sup>th</sup> 2008.

<sup>16</sup> Shell pulls out of big wind farm. See <http://news.bbc.co.uk/go/pr/fr/-/1/hi/business/7377164.stm>

most people are in favour of wind energy, with support increasing among those living closer to the wind farms.

**INDEPENDENT COMMENT:** We agree that this is a subjective, personal matter. If someone says they like wind turbines it is impossible to argue with them. There are certainly many opinion polls that show that most people support wind farms. However, the studies cited above in the early 1990s are so out of date and the turbines so small that they have no relationship to today's monsters. Having campaigned across much of northern England and Scotland, it is abundantly clear to FELLOWS that once people are given all the facts rather than wind industry spin, they are mostly opposed to wind farms. And people should be proud to be a NIMBY (Not In My Back Yard). As Dr Valerie Carril (University of Barcelona) said; *Nimbys are in fact protecting the whole community from decisions that might not be in the best interests of the locality. The interest of the developer is obviously to make a profit but will they do anything for the quality of life of the rest of the community? The answer is often NO, and so protesters are an essential part of getting the proper arguments and merits of any plan discussed*.

#### 11. Myth: Wind farms negatively affect tourism

**Fact:** There is no evidence to suggest this. The UK's first commercial wind farm at Delabole received 350,000 visitors in its first ten years of operation, while 10,000 visitors a year come to take the turbine tour at the EcoTech Centre in Swaffham, Norfolk. A MORI poll in Scotland showed that 80% of tourists would be interested in visiting a wind farm. Wind farm developers are often asked to provide visitor centres, viewing platforms and rights of way to their sites.

**INDEPENDENT COMMENT:** Neither Delabole nor Swaffham visitors centres were a success. At various times both needed local authority cash bail-outs and both eventually went bankrupt to be reopened in a different guise. Of the 150+ wind farms in the UK virtually none has a viewing platform or a visitor's centre. Of course many people would find a visit to a wind farm interesting – out of curiosity if nothing else – but that does not justify covering the countryside with them.

Of greater importance is the effect of wind farms on income from tourists. Several reports have studied this issue<sup>17, 18</sup> and concluded that up to 18% of tourists would not revisit a location if wind farms proliferated. This may seem a small proportion but with a scenic county like Cumbria where tourism income amounts to £1.2 billion a year, the loss of 15% would amount to £180 million of lost revenue together with hundreds of associated jobs. The same would apply to other scenic centers in Scotland, the West Country, Wales and elsewhere. In fact a Scottish study (footnote 18) found that *'...a significant minority (20% to 30%) of tourists preferred landscapes without windfarms'*. In an internet survey in the same study, 17.8% said they would not visit an area if a wind farm was constructed. These figures are inconsistent with their evidence from a literature review that *'...overall there is no evidence to suggest a serious economic impact of wind farms on tourists'*. It is all very well for wind companies who

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<sup>17</sup> *UK Energy Policy: The Small Business Perspective & the Impact on the Rural Economy*. Report by Candida Whitmill for the Small Business Council of the DTI (now BERR), February 2006.

<sup>18</sup> *The economic impacts of wind farms on Scottish tourism*. A Report for the Scottish Government by Glasgow Caledonian University, March 2008

make their millions from wind farms to play down these effects, but in doing so they put at risk the livelihoods of many other people trying to make an honest living.

## 12. Myth: Wind farms harm property prices

**Fact:** There is currently no evidence in the UK showing that wind farms impact house prices. However, there is evidence following a comprehensive study by the Scottish Executive that those living nearest to wind farms are their strongest advocates<sup>12</sup>.

**INDEPENDENT COMMENT:** Here the BWEA is simply not telling the truth. The Royal Institution of Chartered Surveyors has carried out a survey of their members<sup>19</sup>. They found that 60% of the sample reported that '*...windfarms decreased the value of residential properties where the development is within view*'. They also found that the negative impact continues after construction is completed but '*...becomes less severe after two years or so...*'. The number of properties affected varied across the Regions from about 75% in the South West to 40% in Wales. The RICS did not say by how much the value decreased. In a 2007 survey this same Institution with the Oxford Brookes University stated "*...as more wind farms are built, more property will become proximate. Therefore, a cautious approach should be adopted...*"

In a court case in Cumbria, the purchasers of a property near Barrow were awarded 20% of the value in damages plus costs because they were not told that a wind farm was to be built close by. This indicates that this judge considered a devaluation of 20%. In this same area several houses have also had their Council Tax bands reduced. As this is calculated on the value of the property, it implies a loss in value and amenity.

Where a specific issue affects a property (e.g. noise, flicker) its marketability can be seriously compromised. A recent letter from an estate agent to the Davis family, who have been driven from their home near Spalding, Lincolnshire, comments as follows on the problem caused by the nearby wind farm<sup>20</sup>: "*I do not believe any prospective purchaser would want to inhabit the property, or indeed in the current climate whether any mortgage lender would be prepared to lend on the property... I am therefore sorry to say that I find myself in the rare situation of having to decline any instructions to market the above property.*"

Government itself has now acknowledged this damage to amenity and value by conceding that a Council Tax discount may be given for '*Property affected by the proximity of an electricity generating wind turbine*'<sup>21</sup>

## 13. Myth: Wind farms kill birds

**Fact:** The RSPB stated in its 2004 information leaflet *Wind farms and birds*<sup>13</sup>, that "*in the UK, we have not so far witnessed any major adverse effects on birds associated with wind farms*". Wind farms are always subject to an Environmental Impact Assessment and BWEA members follow the industry's Best Practice Guidelines and work closely with organisations such as English Nature and the RSPB to ensure that wind farm design and layout does not interfere with sensitive species or wildlife designated sites. Moreover, a recent report published in the

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<sup>19</sup> *Impact of wind farms on the value of residential property and agricultural land*, Survey by the Royal Institution of Chartered Surveyors, March 2003.

<sup>20</sup> Letter to Mr and Mrs Davis, 29<sup>th</sup> April 2008 from Munton & Russell, Estate Agents, Spalding, Lincolnshire

<sup>21</sup> Hansard, May 13<sup>th</sup> 2008: Column 1437W – continued and 13<sup>th</sup> May 2008: column 1442W continued

journal *Nature* confirmed that the greatest threat to bird populations in the UK is climate change<sup>14</sup>.

**INDEPENDENT COMMENT:** The impact of wind farms on birds depends very much on individual site characteristics. Certainly for small, typical lowland wind farms in Britain there is little evidence of bird deaths. However, there is a significant risk if wind farms are sited on migration routes, near major foraging grounds, between feeding grounds and roosting sites, or near important breeding grounds. If a wind farm site is carefully selected and avoids these sensitive areas then the risk of collision can be considerably reduced. Examples of inappropriate sites include Barvas Moor on the Isle of Lewis which is both a rare and protected blanket bog with deep peat<sup>22</sup> as well as an important bird habitat. The RSPB objected throughout to this application, which was finally turned down in early 2008, as well as to the Pairc application for 53 turbines in central Lewis, the home of a growing Sea Eagle population<sup>23</sup>. A second site that has proved disastrous is the Island of Smøla off Norway. Here a wind farm has killed many Sea Eagles and driven many others away since it began operating in 2005. The RSPB said *'In short, the Smøla wind farm has caused birds to die and driven many others away with no evidence that they are breeding elsewhere'*<sup>24</sup>.

Perhaps of greater concern is disruption to and loss of habitat. The major construction activities needed to erect a wind farm often damage sensitive sites and introduce an element of human intrusion into what are often remote and peaceful locations. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are especially vulnerable. It is strictly against EU legislation to build a wind farm within these areas or on land adjacent to them where an impact can be expected. Unfortunately, especially in Scotland, these regulations are often ignored. The RSPB agrees with these statements and said *'...evidence from Spain and the US confirms that poorly sited wind farms can cause severe problems for birds, through disturbance, habitat loss/damage or collision with turbines'*.<sup>25</sup>

Though not mentioned by BWEA, bats are perhaps at much greater risk than birds. There are many reported instances of large number of bat kills around turbines built on their foraging grounds (often ridges). This may be due to air turbulence (vortices) near wind turbines which cause them to lose flight control, or to their inability to correctly echo-locate a fast-moving curved turbine blade. As all species of bat in the UK are protected, this is a significant concern.

The BWEA comment on climate change may be true but as wind farms make almost no contribution to addressing this problem, the remark is redundant in the context of birds.

#### 14. **Myth: Wind farms are dangerous to humans**

**Fact:** Wind energy is a benign technology with no associated emissions, harmful pollutants or waste products. In over 25 years and with more than 68,000 machines installed around the world<sup>15</sup>, no member of the public has ever been harmed by the normal operation of wind turbines. In response to recent unscientific accusations that wind turbines emit infrasound and

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<sup>22</sup> See *'Save the Lewis Peatlands'* at <http://rspb.org.uk/supporting/campaigns/lewis/index.asp>

<sup>23</sup> RSPB Press Release, *Protecting wildlife sites: Pairc wind farm, Isle of Lewis*, 2<sup>nd</sup> August 2007

<sup>24</sup> Brian Unwin, *Sea eagles being killed by wind turbines*, Telegraph, 27/06/2007

<sup>25</sup> RSPB Press Release *'Wind Farms'* 14 September 2005

cause associated health problems, Dr Geoff Leventhall, Consultant in Noise Vibration and Acoustics and author of the Defra Report on Low Frequency Noise and its Effects<sup>16</sup>, says: "*I can state quite categorically that there is no significant infrasound from current designs of wind turbines. To say that there is an infrasound problem is one of the hares which objectors to wind farms like to run. There will not be any effects from infrasound from the turbines.*"

**INDEPENDENT COMMENT:** Leventhall might be right but his results would be believed far more if he was not closely associated with the wind industry. A recent report from Salford University<sup>26</sup> found noise problems in some 10 or so UK wind farms but refused to say which they were thus making checking the data impossible. One of the authors of this report also makes a living by representing wind power companies at Public Inquiries and so is not independent.

#### 15. Myth: Wind farms are noisy

**Fact:** The evolution of wind farm technology over the past decade has rendered mechanical noise from turbines almost undetectable with the main sound being the aerodynamic swoosh of the blades passing the tower. There are strict guidelines on wind turbines and noise emissions to ensure the protection of residential amenity. These are contained in the scientifically informed ETSU Working Group guidelines 1996<sup>17</sup> and must be followed by wind farm developers, as referenced in national planning policy for renewables<sup>18</sup>. The best advice for any doubter is to go and hear for yourself!

**INDEPENDENT COMMENT:** While wind turbines have improved, the problem of noise remains. The industry standard (ETSU-R-97) was prepared in the mid-1990s when turbines were quite small. Today a typical turbine can be 100-125 metres high (328-410 feet). Hence the guidelines have not kept up with the technology and are, to all intents and purposes, out of date. Following out of date guidelines – even strictly - is useless for everyone concerned.

Experience also shows that wind farm noise is very hard to predict. Even a modern wind farm like Wharrels Hill (Cumbria) which began operation in 2007 is causing major problems for some residents in the nearby town of Bothel, while a wind farm at Deeping St Nicholas (Lincolnshire) has caused the residents of a nearby farm to move out of their home.

The BWEA says you should go and listen for yourself. That is quite difficult to do as you have to choose a day when the wind is strong enough, blowing from the right direction and then stand in the right place. The wind industry often says you can hold a normal conversation when standing right under a turbine. True - but that is not the problem. It is when standing at 500 to 1,500 metres away that the compressive thump as the blades pass the towers is heard or the low frequency vibrations are felt. Recently in a further report by van den Berg *et al*, noise was found to be the most annoying aspect of wind turbine proximity<sup>27</sup>.

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<sup>26</sup> *Research into Aerodynamic Modulation of wind turbine noise. Final Report.* Prepared for DEFRA by the University of Salford, July 2007

<sup>27</sup> van den Berg *et al*. 'Visual and acoustic impact of wind turbine farms on residents' Universities of Groningen and Gothenburg. Ref FP6-2005-Science-and-Society-20. Published June 3<sup>rd</sup> 2008

To deal with the problem of noise, Planning Authorities and Inspectors often attach conditions. Recently a High Court case<sup>28</sup> found that the conditions were 'unenforceable' and the matter was referred back to the Secretary of State for 'redetermination'. Even more recently, the Local Government Ombudsman found that the noise conditions attached to a wind farm were 'vague, open to interpretation, immeasurable and thus unenforceable'. This has now been referred to the Parliamentary Ombudsman<sup>29</sup>.

All this could be avoided if the recommendation of the British Noise Association was followed<sup>30</sup>, namely that the minimum distance for a wind farm from a dwelling should be 1 mile.

**BWEA Note** The 'average modern wind turbine' referred to in this document has a rated capacity of 1.8 megawatts (MW) onshore. Data on consented projects and applications currently being progressed shows that this will increase to over 2 MW in the near future. Offshore, turbines currently being installed are rated at 3 MW, and it is expected that this will rise to a typical 5 MW per machine by 2010.

## Original BWEA References

<sup>1</sup> Energy White Paper (2003), Our Energy Future - Creating a Low Carbon Economy, available online at <http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf>.

<sup>2</sup> DTI (2004), DUKES, Annex E - Energy and the environment, available at [www.dti.gov.uk/energy/inform/dukes/dukes2004/annexe.pdf](http://www.dti.gov.uk/energy/inform/dukes/dukes2004/annexe.pdf).

<sup>3</sup> See [BWEA calculations](#).

<sup>4</sup> Milborrow, Dispelling the Myths of Energy Payback Time, as published in Windstats, vol 11, no 2 (Spring 1998).

<sup>5</sup> DTI (2004), Digest of United Kingdom Energy Statistics 2004, Table 5.10 Plant loads, demand and efficiency, available online at [http://www.dti.gov.uk/energy/inform/energy\\_stats/electricity/dukes5\\_10.xls](http://www.dti.gov.uk/energy/inform/energy_stats/electricity/dukes5_10.xls).

<sup>6</sup> See The Carbon Trust and DTI (2004), Renewables Network Impact Study, available online at [http://www.carbontrust.org.uk/carbontrust/about/publications/Renewables\\_Network\\_Impact\\_Study\\_Final.pdf](http://www.carbontrust.org.uk/carbontrust/about/publications/Renewables_Network_Impact_Study_Final.pdf) and National Grid (2004), Seven Year Statement, available online at [http://www.nationalgrid.com/uk/library/documents/sys\\_04/default.asp?sNode=SYS&action=&Exp=Y](http://www.nationalgrid.com/uk/library/documents/sys_04/default.asp?sNode=SYS&action=&Exp=Y)

<sup>7</sup> Milborrow (2003), The Economics of Wind Energy, WREN International Seminar.

<sup>8</sup> ExternE (2003) External Costs, Research Results on Socio-Environmental Damages due to Electricity and Transport, available online at <http://www.externe.info/externpr.pdf>.

<sup>9</sup> See PIU (2002), Renewables Innovation Review, available online at <http://www.dti.gov.uk/renewables/policy/oxeraresults.pdf>;

Hansard, 21 June 2004, Column 1225W, available online at <http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmhansrd/cm040621/text/40621w14.htm>;

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<sup>10</sup> RBA (1998), Stroud District Residents Survey, RBA for Triodos Bank, The Gloucestershire Water & Energy Forum, BWEA and Western Windpower.

<sup>11</sup> For latest national study, please see TNS (2003), Attitudes and Knowledge of Renewable Energy amongst the General Public, On behalf of: Department of Trade and Industry, Scottish Executive, National Assembly for Wales and Department of Enterprise, Trade and Investment Northern Ireland.

<sup>12</sup> Mori (2003), Public Attitudes to Windfarms a Survey of Local Residents in Scotland, Scottish Executive Social Research.

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<sup>28</sup> Ruling against the conditions attached to the Bradwell wind farm consent by an Inspector in a High Court case against nPower Renewables, 2007

<sup>29</sup> Local Ombudsman decision into the Deeping St Nicholas wind farm case, March 2008

<sup>30</sup> 'Location, location, location: an investigation into wind farms and noise'. The Noise Association, July 2006

<sup>13</sup> RSPB (2004), Information leaflet on Wind Farms and Birds.

<sup>14</sup> Extinction risk from climate change, Nature 427, 145 - 148 (08 January 2004).

<sup>15</sup> EWEA: 68,000 turbines installed worldwide by the end of 2003.

<sup>16</sup> Defra (2003), A Review of Published Research on Low Frequency Noise and its Effects, Report for Defra by Dr Geoff Leventhall Assisted by Dr Peter Pelmeare and Dr Stephen Benton. Available online at <http://www.defra.gov.uk/environment/noise/lowfrequency/pdf/lowfreqnoise.pdf>.

<sup>17</sup> The Working Group on Wind Turbine Noise, The Assessment and Rating of Noise from Wind Farms, September 1996. ETSU-R-97.

<sup>18</sup> For a copy of PPS22, see <http://www.odpm.gov.uk>.

**CONCLUDING INDEPENDENT COMMENT:** It will be apparent from the above well referenced Independent Comments that the BWEA has been very frugal with the truth in many of its 'Facts'. Any reasonably fair and impartial reader can only draw one conclusion, namely that the commercial interests of the BWEA and its members over-ride those of members of the public and in so doing misrepresent the real deficiencies of wind farms.