

To anyone concerned about the British countryside ...

Having had hundreds of queries from park owners, park users and other members of the public concerned about the increasing number of wind farms in the planning pipeline I have put this document together.

Please note I have been helping campaign against wind farms for over 10 years so my view are somewhat partisan, however, I urge you to read the following before coming to your own conclusions.

David Bellamy

A handwritten signature in black ink, appearing to read 'David Bellamy', with a small floral or leaf-like flourish at the end of the signature.

INTRODUCTION

The next few years will be crucial for the British Countryside. Hundreds of new wind farm projects are on the drawing board. These threaten to blight some of the most beautiful stretches of Britain's countryside and coastline and affect the lives of the people who live, work and visit these areas.

A review of the many websites put up by the pro-wind lobby and a survey of the main arguments wind power's backers are putting forward make interesting reading. Even more revealing are the positive assumptions that the general public have often unwittingly made about the technology. Almost without exception, the arguments and assumptions in favour of wind are flawed, give only half the picture and ignore the basic economic and engineering realities of the technology.

The sad truth is that wind will provide the UK with an unreliable supply of minimal amounts of electricity that, despite its claims to 'greenness', will have no significant impact on global warming and will divert funding from better alternative power strategies such as energy efficiency. In fact wind power is a planning fiasco that is destroying the natural beauty of some of our most important landscapes – a fiasco which threatens the one industry that represents an economic lifeline to the countryside: tourism.

The further painful truth is that the development of wind power is already costing

the tax and fuel-bill payers in the UK, tens of millions of pounds a year in subsidies and levies paid to the wind farm operators. This figure could rise to up to £400 million annually in the future. Because of the economic uncertainty of this technology and the reluctance of banks to back it, the same companies that are receiving this so-called 'dough for blow' are now lobbying the government to underwrite their investment to the tune of 12 billion pounds. Add to this the billion pound (or so) bill for updating the power grid to accommodate wind (sure to be passed on to the consumer and tax payer) and the public bill for providing wind companies with fat profits will be massive.

How this has all come about beggars belief. This report attempts to give a fuller picture of the issues and bring some sanity to the wind power debate. Read it and decide for yourself what the myths and facts of the wind power debate actually are. Tellingly, some in the pro-wind lobby have in the past stooped to publically threatening those who do not agree with them. If the wind industry really believe in their product, why have they resorted to such 'bully-boy' tactics? What is more, why, if they are so sure of the commerciality of their products, are they rushing to make sure that you the tax payer picks up as much of the bill as possible? The facts speak for themselves.

SCENERY, COUNTRYSIDE AND WILDLIFE

Myth: Wind farms don't spoil the scenery

Fact: Wind farms have a fundamental visual impact on the landscape. Current models, with 70-metre hub heights and 60-plus metre rotor diameters, are taller than 30-storey tower blocks and as wide as a 747 jet and even larger models are planned, especially offshore.

Because they require exposed and open countryside, wind farms can be seen for miles and the eye is drawn to their spinning blades. Because of this their 'Zones of Visual Influence' of at least 10km in diameter (and can extend significantly further). Those who argue that wind farms are in some way beautiful, forget that they are forcing their views on a vast number of people who disagree.

The development of wind farms also usually involves the construction of many miles of visually intrusive service roads, transmission lines and pylons. This is because most wind power sites are in areas remote from the grid.

Wind farms already blight some of the most scenic areas of the countryside from the moors of County Durham to the Welsh hills. Proposals now threaten some of the most important areas of the British countryside: from the Scottish island of Lewis (potentially home to Europe's largest wind farm) to the heart of the Cambrian Mountains (proposed site of the Cefn Croes windfarm). In the next two

years (2004-5) over 800 turbines are planned. Over 200 of which are off-shore (see below for details of what impact these will have).

Myth: Wind farms won't spoil the country

Fact: The scope of the potential development of wind farms in the UK is frightening and could ruin large tracts of the country. To meet government targets for renewable energy - under which wind will produce about 5% of Britain's electricity by 2010 - between five and ten thousand machines (on-shore and off) will have to be put up. This large number will be required because wind turbines produce such relatively small amounts of electricity (see below).

As there are about 1,000 wind turbines in the UK (in 2003), this will mean that over 10 wind turbines will have to be put up every week to meet targets. This rapid expansion is already starting. In a little over one week in early 2003 consent was given for the construction of more wind power capacity than was installed in the whole of the 1990's. If development of this scale goes ahead then it will be difficult to avoid wind turbines in certain areas of the countryside (especially coastal Scotland) and along many coast lines.

Anti-wind turbine campaigners believe that planning guidelines are inadequate to stop the advance of wind farms and that as more and more wind turbines are built in scenic areas, so we will be manoeuvred into a situation where no further objections can be justified on 'landscape' or 'scenic' grounds. For example, they point to Scottish National Heritage research that highlights serious flaws in Visual Impact Assessments and the poor quality of many Environmental Impact Assessments. There is also evidence that clearly shows that the Scottish Executive and the wind farm developers are desperate to avoid a Public Enquiry into this industrialisation of our countryside - why?

Myth: Wind turbines do not harm birds

Fact: The fact is that wind turbines kill birds (and also bats). Although studies show that mortality numbers are generally low this does not mean that they are insignificant. This is particularly the case for badly-sited turbines and for rare, long-lived species such as Golden eagles.

For example, in Spain a recent study covering less than 400 turbines demonstrated that the death toll was as high as 6450 birds in 1 year. Of particular concern was the death of 409 griffon vultures out of a national population of only a few 1000. Add to this the fact that turbines disrupt the migratory, breeding and feeding activities of many bird species and their impact cannot be blithely ignored.

Many anti-wind farm campaigners feel that bird-impact data is down played in the UK. They also point to a potential conflict of interests in the fact that the Royal Society for the Protection of Birds (RSPB) promotes wind power while also giving expert advice on wind farm planning decisions. Elsewhere, the impact of wind turbines on birds has already influenced planners. For example, in Holland a project to build a huge wind farm on the main Dyke that runs between Norse Holland and Friesland was cancelled in part because of concerns about bird life.

Myth: Wind turbines do not harm the countryside

Fact: The fact is that the construction of these enormous industrial sites involves considerable environmental disruption and upheaval. Site access roads must support the large cranes needed for turbine construction, maintenance and decommissioning. These roads are built from rock mined from 'borrow pits', a trade euphemism for a small quarry which manages regularly to evade Local Minerals Plans. Sites can require around two thousand tonnes of rock and a kilometre of access road.

Each turbine itself requires a foundation hole the size of three double-decker buses, which is then filled with concrete and steel. In upland locations these holes damage underground and surface water courses, cause drying out and 'lagooning' of moor land surfaces while destroying wildlife habitats and blanket bogs one of the rarest vegetation types in the world.

Cumulatively, these impacts can be huge. For example, if all the wind farm sites proposed for the Moray area in Scotland are developed this would mean between 200 and 300 kilometres of access tracks scarring the countryside and a quarter of a million tonnes of reinforced concrete for turbine foundations, this to be left into perpetuity. The damage to the environment and wildlife habitat would be incalculable.

This development undoubtedly "industrialises" the landscape: a fact that could be used as a justification for future developments in the area around wind farms.

ELECTRICITY GENERATION & GLOBAL WARMING

Myth: Wind farms are a good source of electricity

Fact: Wind farms produce relatively small amounts of energy. This is because of the inherent difficulties of extracting power from the wind and because wind turbines cannot work if the wind is too light or too strong. Studies have found that wind turbines produce on average only between 25% and 30% of their

theoretical capacity (ie the amount they would generate in ideal conditions).

Two of the biggest wind farms in Europe are close to each other in Powys, at Llandinam and Carno. Between them, they have 159 turbines and cover thousands of acres of land. Together they take a year to produce less than four days' output from a single 2000 MW conventional power station. Together, they have an output averaging 20 MW (in winter, UK demand peaks at about 53,000 MW).

The pro-wind farm lobby usually give figures showing how many 'houses' a wind farm will power. These figures are often misleading, since this 'domestic load' excludes hot water and space heating. Add to this the fact that about two-thirds of our power is needed for hospitals, schools and industry and it becomes apparent that the wind power lobby are simply using statistics to make a much better case for wind than it merits.

Myth: Wind farms will let us close down conventional and nuclear power stations

Fact: Because the wind does not blow all the time and is difficult to predict, it cannot provide a reliable source of power. This means that conventional and nuclear power stations can not simply be turned off just because wind turbines are being put up. Instead they have to be available as 'back-up' - either running at less than full capacity or in 'spinning reserve' - in case the wind drops too low or blows too hard for wind turbines to function.

In fact, the Royal Academy of Engineering says that if 22 GW of wind generation capacity was installed (about the amount needed if renewables are to supply 20% of the UK's electricity), then 16 - 19 GW would have to be available in the form of conventional plant capacity in order to provide back-up power when wind is light, absent or too strong. In other words we would need to keep most of our conventional and nuclear stations open. The fixed capital costs of this partly used plant would be about £1 billion and would have to be borne by the consumer.

If we relied simply on wind, without this back-up, we would be risking massive power outages that would cripple businesses and the economy as well as plunging the rest of us into darkness.

Of course, the back up plants would still produce emissions while in back-up mode. Indeed, if wind power did expand to contribute about 20% of the UK's electricity (albeit unreliably), engineering experts estimate that any carbon dioxide savings produced by wind power would be cut by up to half due to the need for back-up power from conventional power stations.

Myth: Wind farms will stop global warming

Fact: The impact of UK wind farms on global warming will be insignificant. This is because wind power will only replace a small percentage of power generated from fossil fuels (which produces the greenhouse gas carbon dioxide) and will do nothing to combat other major sources of carbon dioxide such as transport. Moreover the manufacture and installation of wind turbines themselves creates a significant amount of carbon dioxide.

Government targets are for wind farms to supply about 5% of the UK's electricity by 2010. This will save about 1.3% of UK emissions - 0.009% of global CO₂ emissions. Clearly that will have no effect whatsoever on global warming.

The negligible impact of a wind turbine is shown by the fact that in an hour an 500 kW turbine sited in Gloucestershire only saves about as much carbon dioxide as is produced by an articulated lorry travelling at 50 mph. Indeed, a single 747 jet in the air produces as much carbon dioxide per minute as Cefn Croes in Wales - one of the UK's biggest proposed wind farms - will save in the same period of time.

Whatever the scope of wind power development, the current levels of growth in industrial development, electricity use, road and air traffic will swamp any impact it might have on global warming. The fact that wind farms do little to combat global warming is highlighted by the situation in Denmark, which, although it has the most developed wind power infrastructure in Europe, still has one of the continent's highest per capita level of carbon dioxide emissions.

Myth: We need windfarms

Fact: We do not need windfarms: There are many other ways to combat global warming and provide us with energy. As has been shown wind farms will actually do little to combat global warming, especially as energy demand continues to grow in the UK. There are many other much more cost-effective ways to combat the problem. These include making present power stations more efficient, controlling traffic and petrol consumption, developing other types of renewable energy and, most importantly, investing heavily in energy conservation.

Calculations show that the amount of energy produced by a 750 KW turbine could be saved by insulating the roofs of less than 500 houses and that saving pollution by insulation is 55 times more cost-effective than saving it by wind turbines.

The latest energy efficiency technology for industrial plant have produced proven energy savings of up to 90%. If such technologies were rolled out to all big

commercial buildings across Britain it would save around 20% of the countries energy use.

Overall studies show that energy saving could feasibly and cost-effectively cut the amount of energy used in the UK by 30% - this making a significant impact on global warming and eliminating the need for wind turbines. Ploughing the subsidies given to wind power into promoting this scale of energy conservation would also create many tens of thousands of local jobs. (I can remember campaigning with both Greenpeace and foe on this very point over 20 years ago.)

Other types of renewable energy are also coming on stream that would allow us to do away with wind turbines. Wave Power is particularly promising. Wave power generation is already tested and proven in America and is now being rolled out in Hawaii and other parts of the world with orders in the pipeline from Europe. Out of sight below the waves the generators produce energy. The equivalent of 1000 square kilometres of them strategically placed around the coasts of Europe would service the base load needs of the Union. This industry would revitalise our ship and rig yards, creating thousands of jobs, many permanent, in coastal communities.

The relative lack of governmental support for energy-efficiency, the lack of a tax on aviation fuel and the recent announcement of a £7 billion road-widening programme are symptomatic of the government's lack of real commitment to tackling global warming. If the government put its energies into solutions that would give real returns - rather than supporting windpower - real progress could be made and fast.

Myth: Windfarms produce 'free' electricity

Fact: The truth is that the development of wind power around the world and in the UK has been heavily subsidized and grant-aided. For example, The Danish government pays subsidies of around 2.5 billion kroner (\$303 million) to wind generators annually. Partly as a result of these payments, Denmark has some of the highest rates for electricity in the world.

In the UK government support means that wind power companies can sell their electricity at premium prices. Power distributors must also ensure that a certain percentage of the electricity they buy is from wind. Thanks to this 'subsidy' system the wholesale price of electricity from wind turbines has been up to four times the price of conventionally-generated electricity. The cost of this system is passed on to electricity consumers and already costs tens of millions of pounds a year. This figure could rise to up to £400 million annually in the future.

Because of the economic uncertainty of this technology and the reluctance of banks to back it, the same companies that are receiving this so-called 'dough for

blow' are now lobbying the government to underwrite their investment to the tune of 12 billion pounds. Add to this the billion pound (or so) bill for updating the power grid to accommodate wind (sure to be passed on to the consumer and tax payer) and the public bill for providing wind companies with fat profits will be massive.

Without this subsidy, it is unlikely that many commercial companies would have got involved in the development of windfarms. Indeed when subsidies were removed from wind farms in the USA in the mid-1980's the whole industry went from boom to bust. Subsidy is in fact the underlying reason why wind power is being pushed so hard by the big power companies - why the world has 'gone mad' for wind without any real debate on its impact or workability.

The companies involved are not altruistic crusaders for the planet – they are simply commercial enterprises interested in profit for their shareholders. As one example of the companies involved take Juice, the renewable energy supplier that is backed by arch anti-nuclear protestors Greenpeace. Juice (along with the rest of its parent company Npower) has been taken over by German company RWE, which has major nuclear interests.

The potential economic impact of wind power on the individual is shown in Denmark: the country with the highest number of wind farms in Europe has domestic electricity prices significantly higher than those of the UK. This means that if wind power is allowed to develop, the fuel and tax-bill payer will be the one footing the bill for the despoliation of the UK's countryside: wind farms are not so much for making energy out of wind as for making a lot of money out of the taxpayer.

PEOPLE

Myth: Wind farms have no impact on people

Fact: The pro-wind lobby argue that the noise from wind farms is minimal and that it does not disturb people significantly. However many people living near wind turbines report that this is not the case and find that their lives are blighted by the background noise of the turbines. For example, a community in Cumbria that has a wind farm almost on their doorstep has spent the last four years desperately fighting the local authority over the noise issues and is finally taking them to court over mal-administration.

Recently United Utilities withdrew their proposal for a wind farm in Buxton not because it would blight the second most well used National Park in the World but because the Health and Safety Executive have their sound testing department nearby - the noise of the turbines would have distorted the results of their tests.

Problems stem from the fact that, although it is possible to stand under a turbine

and talk normally, the low frequency noise they produce is widely distributed, particularly down-wind. The modelling of the noise impact from wind farms is also very difficult and has often been miscalculated - to the dismay of many people living nearby. Indeed a study from Holland shows that actual noise levels may be more than double those predicted by developers using their computer models.

Wind turbines also produce other annoying effects such as the disruption of television reception, shadow flicker, strobing and light reflections. Turbines have also been known to catch on fire and also to throw lumps of ice from their blades.

In the most extreme cases people have experienced stress and other mental problems because of the impact of wind farms on their lives and have been forced to move away from their homes³.

Myth: Windfarms provide jobs and do not affect tourism

Fact: Pro-wind farm campaigners argue that wind farms create jobs. However, after the initial employment opportunities provided in its construction, a wind farm actually requires few people for day-to-day maintenance.

Most wind turbine production is currently in countries such as Denmark, however the pro-wind lobby argue that this will change as wind power picks up in the UK. However according to anti-wind campaigners dazzling creative accounting is used by the wind industry to boost potential employment figures "relating to" wind, (put at 20,000 for the manufacturing, installation and maintenance of recently announced offshore wind developments). The simple truth is that if the subsidies going into renewables were diverted to energy conservation, tens of thousands of jobs would also be created at a stroke, and far more emissions would be saved (see below).

In comparison there is mounting evidence that wind farms could threaten the tourist industry that is a vital part of the rural economy. Many tourism agencies have criticised wind farm developments and it is more than likely that once wind turbines stop being a novelty and start to dominate our landscapes in ever increasing numbers then, they will drive tourists away. Recent research carried out by Visit Scotland found that fifteen per cent of holidaymakers walking in the Scottish Countryside would steer clear of an area with a wind development. Nationally, this would result in the loss of over 3,750 tourist-related jobs, 430,000 trips and over £80 million in revenue. A further ten per cent said they would be 'less likely' to return to the Scottish countryside if the number of wind-power sites increased.

Wind farms do bring some financial benefits to individual landowners and to

locals in the form of land rents and community 'compensation' funds. These benefits could easily be outweighed by a decline in tourist numbers. Thanks to holiday cottages and caravan parks, tourism has become an important element of farm diversification. So what one landowner gains others may lose, further draining a diversity of jobs from the rural economy. This is one of the reasons that communities have found themselves torn apart by the wind issue.

Myth: People want wind farms

Fact: Despite what the pro-wind lobby say, many, many people do not want wind farms. One symptom of this dislike is the fact that estate agents report that wind farms can dramatically decrease property values. In Denmark, the National Association of Neighbours of Wind Turbines say that most estate agents estimate a 25 - 30 % fall in property value when turbines are put up nearby.

The voices raised against wind farms are many. Some of the country's most respected scientists and NGOs (such as the National Trust and the Council for the Protection of Rural England) have stated that they are against the whole-sale development of wind farms. All over the UK communities have got together to challenge the development of wind farms in their areas and as the number of wind farm developments increase so do the numbers opposed. This is as true for off-shore developments as for on-shore: Plans to build a huge windfarm off the south Wales coast at Scarweather Sands off Porthcawl have been met by 3,100 objections and an 8,000-signature petition.

Community opposition has worked: In fact 16 out of 18 planning applications for land wind farms in Wales failed between 1993 and 1998, due to local objections³. However, in many communities the wind farm issues has created bitter division, often between those who will benefit financially from the compensation and land rent payments they receive and those who will have to live with the consequences of their neighbours actions. Indeed, members of some communities have been threatened and intimidated when they have dared to oppose the development of wind farms in their areas. This intimidation has even led to one of the main pro-wind websites carrying a section threatening seven anti wind farm campaigners with "we know where you live" slogans, which it was subsequently forced to remove it by the police. If the wind lobby is so sure of its case, why does it need to be so heavy-handed?

THE FUTURE

Myth: Offshore is the answer

Fact: With the recent announcement of a massive expansion in the development

of offshore wind farms, many in the pro-wind lobby are saying that off-shore is the answer. Recently the development of extensive new wind offshore farms was given the go-ahead off the North West coast, the Wash and Thames Estuary. Predictions are that there will be thousands off shore wind farms constructed in the next ten years.

Unfortunately many of these offshore wind farms will have a significant visual impact and will do little to improve the functioning of wind in terms of the reliability of the power it supplies and its economic and environmental performance. These areas are also in the vicinity of important resident and migratory bird who enjoy the freedom of the skies and important nature reserves along the coast.

How acceptable wind turbines at sea turn out to be will depend on how close to the coast they are sited, how scrupulously the developers avoid coasts of special beauty and how carefully cable landing sites and pylons to carry cable to grid connections are sited. Many experts are also worried about the turbine's impact on sea birds and other sea creatures.

The unhappy truth is that wind farm developers are likely to be more interested in sites closer to land. This is because as the distance to land increases the cost of building and maintaining the turbines and transmitting the power back to shore also increase sharply.

Energy Technology Support Unit (a DTI agency) has estimated that nearly half of off-shore turbines will be within 10 km (6.25 miles) of the coast, with fewer than 18% beyond the 20 km line. Sites within the 10km line are already with us, for example the under-construction 30-turbine North Hoyle Offshore Wind Farm is situated 7-8km off the North Wales coast between Prestatyn and Rhyl.

Electricity from turbines at sea will certainly be more expensive and not much more predictable than that from land-based machines. The technology is more expensive and requires huge investment. The proof of that particular pudding lies in the fact that Denmark have dumped their plans for three enormous offshore farms in their own waters due in part to crippling costs (although they are now seeking private investment).

CONCLUSION

" Each wind turbine is like an executive house at least 22 stories high built in an area of great natural beauty on a ridge where every one can see it whether they want to or not. They are not so much a farm making energy from wind , but a farm for making lots of money out of the taxpayer's pocket". These words of wisdom were spoken at a meeting in Newbridge, Gwent on 23rd March 1994 by

Neil Kinnock. A meeting that successfully opposed the siting of a wind farm Mynnd Maen that would have desecrated his beloved three valleys upon which millions of pounds had been spent improving their image to attract new people.

These words are as true today as they were then: Wind power is being promoted since it offers quick profits, subsidised by you the tax payer. It will not help solve global warming or free us from our reliance on fossil fuels like oil and coal to any significant degree.

Ask yourself this question: "Why does the government not even listen to the experts the Royal Academy of Engineering who council that wind will not even generate a reliable supply of electricity?" Perhaps because wind is in many ways a ruse that makes the government seem to be promoting 'green' things, when in fact the opposite is true.

Wind power threatens to industrialise the countryside, hurt the tourist trade - the main financial lifeline of many rural communities - and destroy much that is most precious about Britain's wonderful natural landscape: its peace and beauty.

Further information...

For more information about the truth on wind farms, check out:

www.countryguardian.net
www.viewsofscotland.org

To look at the myths, check out:

www.bwea.com
www.yes2wind.com

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Myth: Wind farms don't spoil the scenery

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Myth: Offshore is the answer

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