

## **WIND POWER MYTH-BUSTERS**

### **1. Introduction**

In May 2011 the Centre for Sustainable Energy (CSE) produced a report – “**Common Concerns About Wind Power**” to provide factual information to community groups. This document summarises the key conclusions and is intended to provide information to address concerns that the public may have about wind power. It can be used in conjunction with other Friends of the Earth briefings and booklets such as “**Wind power: your questions answered**”.

If you are responding to a planning application we would recommend you refer to the full document. [http://www.cse.org.uk/downloads/file/common\\_concerns\\_about\\_wind\\_power.pdf](http://www.cse.org.uk/downloads/file/common_concerns_about_wind_power.pdf).

### **2. Manufacturing, constructing and operating wind turbines uses more energy than the turbine itself will generate.**

The average wind farm is expected to generate at least 20–25 times the energy required in its manufacture and installation over its lifetime. This compares well with other forms of power generation systems. For example, coal offers a lower energy return on investment of around 8 and nuclear around 9. On average a wind farm will have generated sufficient energy in just half a year to account for all the energy that is required in its construction and operation.

### **3. Wind energy is more expensive and receives more public subsidies than any other form of energy generation**

A Department of Energy and Climate Change report in 2010 showed that estimates for onshore wind are now 9.4p/kWh. Electricity from nuclear power is estimated to be 9.9p/kWh and electricity from gas 8.0p/kWh. Offshore wind is estimated to be more expensive, with costs of 15.7–18.6p/kWh, although this is expected to fall to 11.0–12.5p/kWh for projects commissioned from 2020.

The only financial support or 'subsidy' from government for the Renewable Obligation (or ROCs) is the administration and regulation by Ofgem, which for 2008–09 was £988,500, representing less than 0.1% of the scheme's total value. While the costs are ultimately reflected in customer's bills, the policy ensures that this is never more than an additional 3p/kWh on a maximum 10% of the customer's electricity use, meaning that 90% of a customer's bill is unaffected by the Renewable Obligation.

A different kind of subsidy which is rarely accounted for is found in dealing with the impacts of fossil fuel and nuclear generation. e.g. natural resource depletion, wider ecological impacts, the long-term effects of toxic chemicals and heavy metals on ecosystems, the health and ecological risks posed by sludge and slurry, the full contribution of nitrogen deposition to eutrophication in fresh and sea water, the prolonged impacts of acid rain and the full assessment of impacts on an increasingly unstable climate. As true cost accounting improves, the relative costs of fossil fuels compared to renewables will increase.

### **4. Wind turbines are inefficient and only work 30% of the time.**

This figure is based on the 'load factor' for onshore wind farms, but is erroneously used to imply wind power is inefficient. This is wrong – load factor and efficiency are not the same; in fact, conventional power stations in the UK run with an average load factor of 50–55%, but these are not described as running “half the time”. Wind farms actually generate electricity around 80– 85% of the time, and power is converted to electricity very efficiently, with none of the thermal waste inherent in fossil fuel plants.

## **5. Wind is an intermittent resource therefore we cannot rely on energy from wind turbines**

A nationwide “geo-spread” of wind capacity, provided it is balanced across the whole grid, means that the sudden loss of all wind power over an entire power system at the same instant due to a drop in the resource is not a credible event. Wind farms offer a flexible, modular system that if implemented as a diversified resource with effective geographic spread can offer a reliable source of low-carbon energy, forming a core part of a mixed renewables portfolio in combination with a reduced platform of responsive conventional capacity.

## **6. Wind farms should only be built offshore**

Offshore wind is forecast to be a major component of our future renewable capacity and, while the UK is a leader in its development, it is in its early stages compared to onshore. Onshore wind is already cost competitive with conventional electricity generation without subsidies and is currently the cheapest way for electricity companies to meet their renewable obligations and for the UK to meet its legally binding commitments to cut CO<sub>2</sub> emissions. Given government projections that onshore wind will become the cheapest way to generate electricity by 2020, it will remain a crucial component of the UK’s renewable strategy.

## **7. We should invest in nuclear power as our main low carbon energy source rather than wind**

Nuclear power’s status as a low-carbon source of electricity is doubtful: while it compares favourably to traditional fossil fuels such as coal, the logistical chain required for extracting and processing uranium, plant construction and plant decommissioning create a carbon footprint that is significantly greater than renewable sources. In addition, the nuclear power industry in the UK and abroad has been traditionally beset with problems involving the start-up, operation and decommissioning of nuclear plants, resulting in economic inefficiency and threats to public health. Despite decades of experience, the unique problem of storage and disposal of hazardous radioactive waste remains a concern, with the cost and potential health implications to be borne by future generations for centuries to come. The long start up time required to make a nuclear power station operational means that nuclear power is irrelevant to the UK’s target to cut CO<sub>2</sub> emissions by 2020. The cost of electricity per unit generated by nuclear power is currently no better than onshore wind power, without taking into account the future costs of cleaning up when a plant is finally decommissioned.

## **8. Wind power is unpopular**

Attitudes toward wind *power* are fundamentally different from attitudes toward wind *farms*. Despite the broad public support for renewable energy (wind included), the development of wind farm projects is often met with stiff opposition at a local level. In the UK a top-down approach has driven much of the country’s wind farm developments so far, creating a democratic deficit that is often filled by vociferous opposition groups. Involving communities in the decision-making and planning process for wind farms not only reduces the need to combat such opposition, but creates a better understanding of the wider issues involved in energy policy and the environment. An informed and motivated community with a real investment in a wind farm project will be well-equipped to integrate renewable technologies effectively in a manner that reduces social inequity.

## **9. Wind farms have a negative impact on property prices**

Research in the UK and abroad shows that there is no devaluation in property prices nearby once a wind farm is operating. These fears are driven largely by the “anticipation stigma” found to exist during the planning and construction of wind farms, often bearing little relation to the actual community opinion or local property markets.

## **10. Wind turbines aren't safe**

Overall the wind energy industry has one of the best safety records of any energy industry, and has seen fatality rates decrease in the face of a rapidly expanding capacity. Wind continues to offer a clean, safe form of electricity supply, with considerably less cost and risk to society than either fossil fuels or nuclear energy.

## **11. Wind turbines cause shadow flicker which can trigger epilepsy**

Because of the geometries involved, shadow flicker is an easily modelled property and can be accounted for during planning and development of a wind farm; indeed, UK government planning regulations stipulate that this must be considered. The predictability and infrequency makes shadow flicker an eminently manageable problem: it can be curtailed by the introduction of various measures, among them re-siting of individual turbines, creating screening features such as tree lines (or using existing ones), and programming the turbines to cease operation for the short time during which dwellings are affected. Due to the size and speed of modern commercial wind turbines, there is no risk of shadow flicker causing photo-epileptic seizures in vulnerable persons.

## **12. Wind turbines are noisy and cause a nuisance**

Detailed guidelines form part of UK planning regulations to prevent undue noise pollution. These, coupled with the quieter design of modern turbines, mean that the noise levels generated by wind farms are comparable to outdoor background noise. Modern designs have seen the gear mechanisms and their housings producing progressively quieter wind turbines, and the latest generation of 'direct drive', or gearless turbines create even less mechanical noise. In addition, blade design has constantly been refined to reduce the noise generated, which also creates a more efficient turbine as less energy is lost to acoustic energy. The onus must however be upon the wind energy industry to be honest about any noise concerns local residents might have, and to work with them to minimise these affects within the framework of the planning regulations.

## **13. Infra sound from wind turbines cause "Wind Turbine Syndrome"**

The consensus within peer-reviewed evidence does not confirm the existence of a "syndrome". The propagation and effects of low frequency sound are well understood, and adverse effects on humans are only evident at infra sound levels far exceeding that generated by operating wind turbines.

## **14. Wind turbines kill bats and birds**

Wind turbines are responsible for less than 0.01% of avian mortality caused by humans, with by far the largest cause of deaths being standing buildings (more precisely, the windows), power lines and domestic cats. Fossil fuels are responsible for over 15 times the number of deaths for every GWh produced: that is 5.2 fatalities/GWh for fossil fuels compared with just 0.3 fatalities/GWh for wind. The discovery that bats are being killed by wind turbines has raised a number of questions as to why this should occur, since bats are known to be excellent at avoiding moving objects using their ability to navigate by echolocation. A recent review of the problem put forward no less than 11 hypotheses as to what might be contributing to these fatalities. Clearly, a great deal of research is still needed. Positive developments, such as the finding that 'feathering' turbines to increase their start up wind speed can reduce both bird and bat fatalities, illustrates how the wind energy industry can respond.