



Public Attitudes Towards Wind Power

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Summary

Cross country public support for renewable energy sources in general and for wind power in particular is very high. The level of public support varies, however, with people's local experience with wind power.

A Survey of Surveys

Public attitude surveys of wind power are of a very varied quality. Often they have not been performed according to scientific standards and there is little co-ordination between the studies. This makes it difficult to make cross country analysis. The surveys on the subject from the nineties have primarily been done in countries like Britain, USA, Canada, Sweden, Germany, the Netherlands, and Denmark.

This paper will sum up some of the main conclusions which can be drawn on the basis of the available surveys. It should be noted, however, that there is a difference between opposition as negative attitude and opposition as actual behaviour such as acts of resistance against new developments (Wolsink, 1996). This paper concentrates on general and local attitudes towards wind power and specific wind power plants.

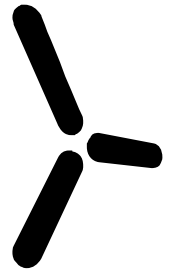
Renewable Energy Sources

Renewable energy sources have more credibility with the public than non-renewables such as fossil fuels and nuclear power. In the USA a national opinion survey (Breglio, 1995) showed that 42 % of the Americans believe that renewable energy sources like solar, wind, geothermal, biofuels, and hydroelectric should be the highest priority for continued federal funding of energy research and development. Fossil fuels and nuclear energy, which are the energy sources generating the most energy in the USA come in last by 7 and 9 per cent.

In Denmark the same questions were posed (Holdningsundersøgelse, 1993). Here the attitude towards renewable energy sources was also positive. A representative group of Danes were asked if renewables should have a higher priority in national energy policy. According to this questionnaire four out of five Danes think that renewable energy sources should have a higher priority. Only 9 per cent disagree. There is no doubt that renewable energy today is considered a full grown source of energy generation. Behind the term renewable energy is however a variety of different generation techniques. It is therefore interesting to investigate whether wind energy in particular also enjoys broad public support.

Wind Power

A Canadian questionnaire asked a representative group of Canadians if they would like to see their provincial power utility give a high priority to wind generated electricity in their province (Omnibus Report, 1995). According to this survey 79 per



cent of the Canadians believe that wind generated electricity should have a high utility priority in Canada. The same tendency can be seen in the Danish survey (Holdningsundersøgelse, 1993). The Danes were asked if Denmark should aim for a higher utilisation of wind power. 82 per cent of the population was in favour of more wind power. A survey made in the Netherlands showed the same pattern. 80% of the Dutch population were in favour of wind energy, 5% opposed it, and 15% were neutral (Gipe, 1995). The same result were found in the UK (Simon, 1996). From 1990 to 1996 thirteen research studies have been made in the UK and across surveys also eight out of ten supports wind power. So, in general both renewable energy and wind power in particular is vested with more credibility than non-renewables such as fossil fuels and nuclear power.

Typical Pros and Cons

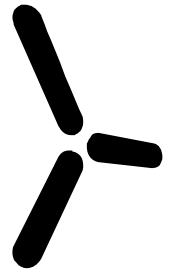
This section will concentrate on typical attitudes towards wind energy and wind turbines. Different opinion surveys have over the years investigated typical attitudes towards wind power in general.

People with no specific experiences with wind power believe that noise is louder than those who actually live beside turbines (Holdningsundersøgelse, 1993). Men believe that turbines are noisier than women do. Middle aged people are in general more critical than other age groups. Other findings in the Danish survey are: Women prefer groups of 2-8 turbines over larger parks and single standing turbines. Men prefer parks of 10-50 turbines over smaller parks and isolated turbines. Opponents value local aesthetics higher than the climate and the risk of e.g. nuclear power.

The acceptance of spinning turbines is higher than that of idle ones not generating power, shows both American and Swedish studies. A paper (Wolsink and Sprengers, 1993) investigating the noise problem in Denmark, the Netherlands, and Germany shows, that the annoyance caused by wind turbine noise affects very few people and the level of annoyance is hardly related to the actual sound level of specific turbines. Instead the annoyance is related to other causes such as negative feeling towards the wind turbines. The Danish survey showed, that those in favour of renewables and wind power in general are more positive about local turbines, they find them less noisy and less intrusive to the landscape (Gipe, 1995).

Even though it seems that the individual perception of noise and visual impact is determined by other factors than the actual noise level and the number of turbines erected, this does not mean, that noise problems and visual effects should be treated superficially. Indeed, site selection should take those aspects into account. This will probably minimise the negative attitudes towards specific projects.

In a British summary of research (Simon, 1996) the typical arguments for and against wind power are investigated.



The Profile of the Nay-sayer

· renewable energy cannot solve our energy problems · wind turbines are unreliable and dependent on the wind · wind energy is expensive · wind turbines spoil the scenery · wind turbines are noisy

The Profile of the Yes-sayer

· renewable energy is very much an alternative to other energy sources · the climate change theory must be taken seriously · wind energy is limitless unlike fossil fuels · wind energy is none polluting · wind energy is safe The two profiles illustrates very well why wind energy is constantly being debated. You can find arguments both pro and con wind energy and no fact sheet is given. Instead the attitudes are mostly based on individual values and beliefs. Whether wind turbines spoil or enrich the scenery, is a matter of taste. Whether the price of wind energy is cheap or expensive depends also on how dearly you value the global climate and whether you believe in the greenhouse theory (Wolsink, 1988).

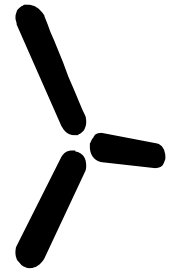
The Sydthy Study

The latest study done in Denmark (Andersen et al., 1997) in the municipality of Sydthy shows some interesting results. Sydthy has 12,000 inhabitants and more than 98 per cent of the total electricity consumption is covered by wind power. This means that Sydthy is one of the places in the World with the highest concentration of wind turbines. The Sydthy opinion poll shows, that people with a high degree of knowledge about energy generation and renewables tend to be more positive about wind power than people with little knowledge.

The distance to the nearest turbine has no effect on people's attitudes towards wind turbines in general. This indicates that people living close to wind turbines do not consider noise and visual impact to be significant problems. As a matter of fact people living closer to the nearest wind turbine than 500 meters tend to be more positive about wind turbines than people sited further away from the turbines.

Much the same pattern was identified when attitudes towards wind turbines in general were cross tabulated with the number of visible turbines from the residence of the respondents. Again, no clear pattern could be detected. But people who could see between 20 and 29 turbines tended to be more positive about wind energy than people being able to see only a smaller number of turbines. Again, this indicates that the number of actual wind turbines in the local environment has no negative influence on people's attitude towards wind energy.

In Denmark there is a tradition for wind co-operatives, where a group of people share a wind power plant. In that respect Sydthy municipality is quite unique with 58 % of the households having one or more shares in a co-operatively owned wind turbine. Regarding the general attitude towards wind turbines, the picture is clear. People who own shares in a turbine are significantly more positive about wind power



than people having no economic interest in the subject. Members of wind co-operatives are more willing to accept that their neighbour erect a turbine.

People living in a city zone (defined by speed limits) tend to be more negative than those living in a country zone. An explanation to that phenomenon could be, that people from the cities have a more romantic view of the countryside, where people from rural areas have a more practical relation to nature, as being a resource which should be put to productive use.

In the municipality of Sydthy four out of five do not feel bothered at all by noise made by turbines. As expected, the longer people live from the turbines the fewer experience noise inconveniences. The Sydthy study also supports the earlier Danish findings, middle-aged people still find noise the most enervating. Men find noise from wind turbines louder than women, and the more positive the attitude towards wind energy the less is the perceived inconvenience. It should be kept in mind, that many wind turbines in Sydthy are of the admittedly noisy early 1980es designs, and not modern quiet models.

Not In My Backyard

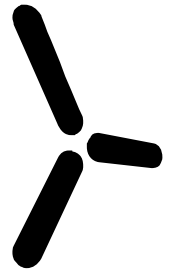
There is a great difference between wind energy as an idea and wind turbines as acceptable structures in the landscape. As we have seen people support the general idea of renewables and wind power. But when it comes to actual projects in a local area, the acceptance of wind power seems to vanish. This pattern is called the »Not In My Back Yard« syndrome or in short just the NIMBY syndrome (Gipe, 1995). The basic theory is that people support wind energy on an abstract level but object to specific local projects because of the expected consequences concerning primarily noise and visual impact. The NIMBY syndrome is not a special feature for wind power. It can be detected in many other situations. New highways, bridges, tunnels, hospitals, airports, nuclear power plants, and other energy generating plants all face resistance at the local community level.

In the UK several before/after installation surveys have been made. In a research report commissioned by BBC Wales (Bishop and Proctor, 1994) local public support for wind power in general and for three specific wind turbine parks before and after installation were measured.

The survey showed, that only one out of five is against a general development of wind power in Wales and seven out of ten support wind energy. The level of general support for wind power is therefore much the same as in Denmark and the Netherlands. At the same time people were also asked about there opinion before and after the three wind farms were built.

Only 40 per cent initially supported the three projects, compared to the 70 per cent who supported the general development of wind power in Wales. We are in other words facing a NIMBY reaction in relation to the specific wind farms.

Those opposing the planned wind power plants mentioned three reasons for being against the plans. The primary concern was noise. Three out of four people being



against the turbines mentioned noise. The two other factors were visual intrusion and electromagnetic interference. After the three projects were completed BBC Wales again asked about the attitudes towards the wind farms.

When we compare the results from before the erection of the turbines with the results after the erection, the pattern is clear. In all three cases people in support of the turbines outnumbered the people against the turbines both before and after. Also the 36.2% of the total population being unsure or not interested in the projects before realisation seemed to move in the direction of supporting the projects after implementation (The surveys investigate only net movements). Still, one out of four dislikes the projects.

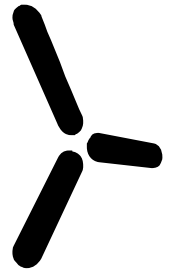
A Dutch wind developer, Energy Connection found the same pattern in the Netherlands. Here, as we saw earlier, the general acceptance of wind energy is high. Specific projects, however seem to lower the acceptance rate during the planning and construction phase. After the implementation of projects the acceptance rate seems to increase to near the level of prior to construction (Gipe, 1995).

The conclusions so far are that public acceptance of wind energy in general is very high. Public acceptance, however, falls when it comes to your own backyard. But public acceptance seems to increase in the local area after the installation of the wind turbines. On the other hand, those who do not favour renewable energy in general tend to find wind energy less acceptable when it comes to noise and visual impact.

The BWEA summary of surveys (Simon, 1996) shows another interesting feature. A comparison between public attitudes in areas with wind farms and control areas without any wind turbines suggests that attitudes towards concrete wind farm developments are more accepted in areas with prior experiences with wind farms than in area with no experiences. That means, that the NIMBY syndrome seems to have the strongest effect in areas where there is no or very little knowledge about wind power. This conclusion indicates that public acceptance of wind energy increases with the level of information. In Cornwall there was a significant change in the attitudes of the residents living in the area of the wind farm before and after construction. In general the population became more favourable to wind energy. 27 per cent of the people asked had changed their attitude since the wind turbines had been operating. Of these, nine out of ten had turned in favour of the use of wind power.

This NIMBY-explanation has been questioned in several studies (Wolsink, 1996). Even though some individuals' attitudes towards local wind power plants can be characterised as NIMBYism, it seems to be a minor factor for most people opposing local projects.

In the latest survey (Hoepman, 1998) from the region of Friesland, the Netherlands people were asked if they wanted to have more wind turbines in their local area, and whether they supported a more intensive use of wind energy in the rest of Friesland. 61 per cent of the population would not mind more turbines in Friesland, if they were not placed in their own backyard. 15 per cent did not want



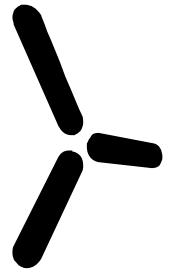
more turbines in the province. This distribution does not differ significantly from earlier studies. But, the interesting feature in this survey was, that the respondents were at the same time asked, whether they could accept more turbines in their local area. Surprisingly 66 per cent were willing to accept more wind turbines in the local community. 18 per cent were against. More people (5 percentage points) could accept new turbines in their own backyard than could accept turbines in the rest of the region. These results indicate that there are some hidden variables other than the NIMBY effect in itself, which determine public attitude towards wind power at the local level.

The NIMBY-explanation is probably a too simplistic way of seeing people's attitudes. There has to be focused on other explanations if public attitude shall be described in a more sophisticated manner. The mentioned study (Wolsink, 1996) concludes, that people in areas with significant public resistance to wind projects are not against the turbines themselves, they are primarily against the people who want to build the turbines. Often the local people are kept out of the decision making process. Some have hostile attitudes against the developers, the bureaucracy or the politicians on beforehand. Those factors have a significant effect on public attitudes in a specific area. Attitudes towards concrete projects are site specific. They are primarily formed by the interaction with central actors and the extent of involvement of local interests are a major explanatory factor.

A recent study (Erp, 1997) done in Germany also questions the hypothesis of the NIMBY-syndrome. The size of a wind turbine project only insignificantly influences the public attitude towards a project. This indicates that the objective impacts related to project size, such as changes in landscape has relatively little effect on attitudes towards specific projects. Size is therefore a rather poor predictor of attitude. Instead the study concludes that the attitudes towards the developer, local decision makers, and the decision process have significant influence on the public attitude towards the project. At the same time the study suggests that a participative approach in the siting procedure has a positive effect on the public attitude towards the project, and thus leads to a decrease in public resistance. What matters is involvement of the local population in the siting procedure, transparent planning processes, and a high information level.

People want to be involved

The Friesland study supports these conclusions. More than 85 per cent of the population wants to be kept informed about plans for new windpower. 60 per cent believed that the distribution of information is a job for the local authorities in the municipality. Another 5 per cent thought, that it is a job for the provincial authorities. Only 13 per cent believed it was a task for the media. In real life people typically get their information about planned projects through personal contacts and the media (Erp, 1997). 49 per cent said they would definitely go to public meetings if such



meetings were arranged. So, there is a great difference between how people expect to be informed, and how things actual work. A recent German study reveals that in less than 50 percent of German wind power projects local inhabitants were given opportunities to articulate their opinion during planning phase. And in only 8 per cent of the cases where people were actually heard, did the developers hold information meetings. In one out of three cases the public had actual influence on the siting process typically through legally prescribed access to present formal objections. If the opposition is to be minimised all involved parties have to be offered real opportunities for influence on a project (Wolsink, 1996). Decision making over the heads of the local people is the direct way to protests.

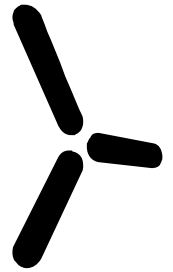
Cross country surveys which give a thorough and complete examination of these factors remain to be seen.

Conclusion

Both the cross country public support for renewable energy in general and for wind power in particular is very high. On an abstract level about 80 per cent of the population supports wind power in the surveys investigated in this paper. On the local level the support of wind power in areas with operating wind power plants is equally high. This means, that four out of five people tend to support wind power both in areas with actual experiences and in general. This, however, does not mean that protests will not appear. It takes only one devoted opponent to start for instance a legal procedure against a planning permit. This is one of the reasons why public conflicts over wind power plants have become the rule rather than the exception (Wolsink, 1996). Lack of communication between the people who shall live with the turbines, and the developers, the local bureaucracy, and the politicians seems to be the perfect catalyst for converting local scepticism, and negative attitudes into actual actions against specific projects. Conversely, information and dialogue is the road to acceptance.

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