Community wind power in Europe and in the UK

by

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CUT-IN NOTE

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ABSTRACT
Commercially sized community wind power schemes, whether owned by local farmers or by cooperatives, are very acceptable under the UK Renewables Obligation for a wide range of sites in the UK. Perceived ‘barriers’ to such schemes include a lack of confidence and knowledge among farmers and grass-roots activists concerning wind power. By contrast, knowledge, expertise and enthusiasm is spread much more widely in countries such as Germany, The Netherlands and Denmark. Nevertheless, an increasing number of community-based wind power initiatives are emerging in the UK. Greater resources on dissemination of expertise about community wind power and support for feasibility/planning costs of some flagship schemes need to be deployed by governmental and non-governmental organisations.

1. INTRODUCTION
The UK Renewables Obligation (RO) for an increasing quota of electricity supply from renewable energy sources (RES-E) is now established (DTI 2005). This gives good incentives for onshore wind power (Nowap 2005), so we are at last beginning to see the wind power build-up in the UK that has been evident in Germany, Denmark and Spain. Under the RO, all electricity suppliers have to purchase and then supply to their customers an increasing proportion of electricity from renewable energy. Under the RO there are essentially two incomes streams, the wholesale price of electricity and the income from the renewables obligation certificates (ROCs). It is only because of the incentives from the ROCs (see later explanation) that wind power is usually economically viable.

However, despite the increased value of RES-E, barriers remain for the increase of more capacity. For wind power, a major barrier has been obtaining planning permission in the UK for installing new wind turbines. Many argue that these planning difficulties could be mitigated by much greater reliance on so-called ‘community wind power’. This article examines the nature and practicality of ‘community wind power’.

The impression gained by this author, after studying the details of several dozen wind power planning cases in England and Wales (Community Wind Power Network 2005, Dyfi 2005, Toke 2005) and also investigating planning conditions on the European continent, is that local ownership is very important for improving the rate of planning acceptance. However, this ownership may often be by farmers, as often in Germany and Denmark, rather than by cooperatives, despite the latter’s political attractiveness. Yet, whoever the owner, there are...
considerable planning advantages for projects if they are locally inspired. This is because a farmer can utilise his/her own social network to advance the planning case (Loring 2004). Personal links to local actors can make a subtle but significant difference to the prospects of gaining planning permission. In addition, a local farmer is in a much better position (because they have the social contacts) to organise a campaign in favour of a windfarm proposal compared to an outside developer who is unlikely to have such good local contacts.

2. DEFINING COMMUNITY OWNERSHIP

Community wind power can mean various things. At its most general it can simply mean ‘local ownership’. Hence we can define community ownership in a continuum, ranging from ownership by a farmer or group of farmers (farmers’ co-operative) to ownership by a large number of small local investors. In addition to the Watchmill project (see section 3 below), there are at least three proposed commercially-sized co-operative projects that are (at the time of writing) in the formal planning process in Wales and Scotland. There are also groups in the East of England, the West Midlands and Cornwall who are gestating projects that would involve community ownership. Two community based schemes, one in Wales (Awel Aman Tawe 2005) and one in Scotland (Castlemilk and Carmunnock Cannock 2005) are currently going through the planning consent process. Two others (discussed below) in Wales and Southern England have recently been granted planning permission.

An interesting hybrid form of community ownership is being taken up by at least two mainstream developers, Falck Renewables and Wind Prospect. Both these developers have an arrangement with Energy4All (2005) which allows them to sell off part of their projects (shares equivalent to one or more turbines) to the general public. Falck is progressing several schemes in Scotland, and Wind Prospect has several schemes that have been given planning consent in Eastern England. Community share offers for these schemes are being marketed through ‘Fenland Green Investments’.

Selling shares to the general public (with preference given to local people) allows positive public relations. In practical terms, such offers give returns to ordinary people and not just institutional investors. It also has broader strategic political advantages for wind power. It creates a group of people who, having made a significant personal commitment, are likely to campaign in support of wind power. Indeed, in Waveney (East Anglia) a pro-wind power campaign group was started by investors in Baywind (Baywind 2005) and they are discussing putting together their own community wind power project with local Greenpeace members. However, it should be emphasised here that even though it is very desirable for developers to sell shares in the scheme to local people, this in itself does not capture the full planning advantages of projects where the active initiators are local people.

It must also be emphasised that community wind power is not necessarily about ‘small’ projects, although community wind power in the UK began with fairly small projects (Leaney et al 2001; Hinshelwood 2000). Research for this paper suggests that small schemes do not have a significantly greater chance of gaining planning consent simply because they are small (Toke 2005). However, ownership, and the degree to which the scheme is promoted by locally based people through the planning consent procedure has a very important impact on planning outcomes. The issues of size and ownership became confused because of a misunderstanding of what happened in Denmark where it happens that the larger project were usually owned by the utilities, whereas the smaller projects owned by a co-operative or farmer tend to be locally owned. Indeed in Denmark, there was actually a law restricting each landowner to ownership of just one commercial wind turbine. On the other hand, in Germany,
some farmer-owned wind power schemes are quite large by British standards. It will help understand what community ownership can mean if we look at some practical examples involving commercially sized wind power greater than 1 MW in capacity.

3. TWO EXAMPLES OF COMMERCIALLY SIZED LOCAL/COMMUNITY OWNERSHIP

A general aspect of wind power operation in the UK is that involvement by farm owners has been limited to receiving royalties paid by conventional developers. Few farm owners have felt confident enough to put much time, effort and their own money into developing their own wind power projects. However, this has happened in a small number of cases. A brief mention of two examples is helpful: Maelogen in Conway, Wales, and Watchmill in Oxfordshire, England.

In the case of Moel Maelogen, three neighbouring farmers gained planning consent for a three-turbine windfarm of 3.9 MW capacity (Moel Maelogen 2005). This windfarm was commissioned in 2002. In November 2004 the larger extension of the windfarm was given planning acceptance. The second application proved to be more controversial than the first, but it may be relevant to point out that at the same time as this second application was considered by Conway Council, the Council refused two other planning applications by ‘outside’ (that is non-locally owned) developers. The farmers proposing the Moel Maelogen development were able to mount an effective public campaign to counter an anti-windfarm campaign. The first phase of the project was financed mainly by a bank loan from Triodos Bank (and part was sold to a German wind power development company). The second phase, which consists of 9 more machines with a combined capacity of 11.7 MW, will be partly financed by local people buying shares in the project. This will be achieved by bonds being issued by the main investor, Triodos Bank.

The Westmill Farm project at Watchmill, near Swindon in Oxfordshire, went through three planning applications over several years, as the proposed size increased to the 6.5 MW that was approved in October 2004. It has been the brainchild of farmer Adam Twine, who lives in what could be called ‘stockbroker’ countryside, and there was a strong anti-windfarm campaign, which delayed the consideration of the application. However, Twine organised a grass-roots campaign and eventually persuaded a majority of the councillors on the local Development and Control Committee to give consent to increasing the size of the project from 4.5 MW to 6.5 MW, with five 1.3 MW machines (Westmill 2005).

The Watchmill scheme will be financed mostly through a cooperative share offer. This involves a public share offer, after which the windfarm will be constructed when sufficient shares have been bought. Preference will be given to local people each buying shares to a total of between £250 and £20,000. The cooperative will be run by a board of local people and the financial side of the project is being organised and managed by Energy4All, an offshoot of the Baywind Co-operative. Baywind Co-operative has two windfarms in Cumbria which were established in the 1990s (Leaney et al 2001) and is owned by ‘ethical’ investors, mainly based in the North West.

4. FINANCIAL ISSUES

Across much of the UK, wind speeds are acceptable for community wind-power financed share offers. Contrary to popular wisdom, the UK’s Renewable Obligation (RO) actually favours cooperative ownership. A brief explanation of funding through the Renewables Obligation is needed to explain this. The RO encourages all electricity suppliers to meet an increasing target for supplying a proportion of their power from renewable sources. The
target started at 3 per cent and rises in annual stages to 10.4 per cent by 2010 and 15 per cent by 2015.

As mentioned earlier, there are two income streams available for renewable generators. One is the standard wholesale price of electricity. The wholesale value of the electricity is normally in the region of £20 to £30 per MWh.

The other income stream is from selling the renewable obligation certificates (ROCs). Generators of renewable energy are given one Renewables Obligation Certificate (ROC) per MWH of electricity generated from renewables. The ROCs are submitted to the official agency to demonstrate their compliance with the RO targets. The ROCs have value because otherwise electricity suppliers have to pay a penalty of £30 per MWh (2002 prices) of renewable electricity that they fail to supply. In addition, this penalty is recycled as an extra reward in respect of each ROC that is issued and then cashed in. Hence if there is an under-supply of ROCs, their market value increases, (theoretically) encouraging more expensive generation to be developed to meet the gap in the renewable electricity market.

The value of one ROC, including recycled value is about £45-£50 (i.e. per MWh), and this value seems likely to remain at current high levels because the RO targets will be under-achieved. The RO is designed as a competitive mechanism, since the more the RES-E generated, the less will be the value of the ROCs, and vice-versa. However, in practice this market is not straightforward. For instance, fines paid by suppliers failing to meet their quota are recycled to suppliers that have met their quota, thus increasing the income of the latter. In addition, many suppliers in the market have vested interest in ensuring that competitive pressures do not drive down the value of ROCs. If that were to happen, the value of their own investments in renewable energy schemes would be reduced. Although the official target for the RO is 10.4% of RES-E by 2010 and 15% by 2015, the ‘de facto’ proportions will probably be about 7% by 2010 and about 10-11% by 2015. Hence there will be a deficit of RES-E for many years, and so wind power developers are likely to receive good income streams in the long term, despite the outward appearance of market uncertainty (Toke, to be published, 2006).

On the other hand, the full value of the wholesale price plus the ROCs is usually not passed onto the generators. Conventional developers are financed by banks which want the security of guaranteed rates per kWh set down as part of long term contracts with a major (and credit-worthy) electricity supplier. In return for the security, the electricity suppliers take a significant proportion of the value of the wholesale price and ROCs. At the present time (end 2004) it seems that 15 year contracts are available from at least one major electricity supplier for a fixed price of 5 p/kWh for both the electricity and the ROCs.

By contrast, co-operative wind power projects may have higher returns. This is because they can trade on short-term contracts with electricity suppliers, so receiving a rather higher proportion of the wholesale price and ROCs compared to schemes which operate with long-term contracts. When a project is owned by many ethical investors, each with relatively small amounts of investment, there is not, in practice, the necessity for long-term contracts for the sale of the electricity to guarantee returns. Contracts for one year (which will be renewed) can be sufficient. Consequently, short-term contracts deliver a much higher proportion of wholesale electricity prices and ROCs value to generators than do long-term contracts.

Hence, if developers are prepared to accept uncertainty, they may expect to sell the electricity and the ROCs combined at about 7p/kWh if they are on an annual contract, say with a Green Electricity supplier. Indeed it may also be possible to obtain such good terms through auctions of ROCs and other elements of electricity supply income organised through the Non-Fossil Purchasing Agency (2005).
There are very often low-cost grid connection options for schemes of capacity about 1 to 4 MW in many areas of the UK, where the local distribution grid can accept the power. However, in thinly populated parts of Scotland and Wales, distribution grid connection may be relatively expensive for smaller projects, (i.e. significantly more than 10 per cent of capital costs), but nevertheless this may be compensated by stronger wind speeds and, perhaps, easier planning conditions. It is often much cheaper (in proportionate terms) to connect a relatively small (that is say, 1-4 MW) project to the local 11 kV and/or 33 kV distribution lines than to have to construct grid reinforcement for larger projects.

Essentially, then, assuming that grid connection costs are not too large, community-co-operative projects are likely to be viable at hub-height wind speed of at least 6.5 m/s. At such wind speeds, community wind power schemes should be viable if capital and installation costs are in the region of £800 per kW capacity, although increased costs are affordable with stronger wind speeds. Note that wind turbine costs per unit capacity increase for smaller capacity machines, so making grid connection of small machines very expensive per unit capacity. Projects may be established on the basis that they can repay their capital costs over 20 years, and give at least 7 per cent dividend per year. Co-operative investment can take advantage of a business start-up allowance which allows a tax offset of 20 per cent of the amount invested.

5. CONTINENTAL EUROPEAN EXPERIENCE

In Germany and Denmark, most wind power is either locally or co-operatively owned, or both in some cases. Knowledge about how setting up a commercial scheme is widely disseminated by local enthusiasts, low cost consultants and locally based agents of wind generator manufacturers (Toke and Elliott 2000).

About 50 per cent of Germany’s considerable wind power capacity (16,000 MW at the end of 2004) is owned by farmers and local cooperatives (that is local, non-corporate actors). The farmers tend to organise themselves into informal cooperatives and develop their schemes incrementally (as at Moel Maelogen in North Wales), into relatively large capacity schemes (Toke and Elliott 2000). Information about setting up commercial schemes is widely disseminated by local enthusiasts, low cost consultants and locally based agents of wind generator manufacturers (Toke and Elliott 2000). Even the corporate sector has tended to have its investments from public share offers. About 40 per cent of wind power has been established by development companies offering public shares to high-income earners. In Germany there are high marginal tax rates, of over 50%, and investors can offset such taxes with wind power investments. However, the number of such development companies is decreasing because the rates paid for wind power under the German feed-in tariff have been reduced.

Around 10% of Germany’s wind power capacity is owned by ‘burgerwindparks’ (citizen windfarms) which are broadly similar to the sort of scheme being set up at Watchmill in the UK. These mainly involve a broad range of local people owning the shares in windfarm cooperatives. Some cooperatives are quite large. Indeed Germany’s first offshore wind park, planned to be 240 MW, is being organised as a cooperative. Investors in burgerwindparks can claim some tax offsets, but these are limited to ordinary person and to to the standard rate of 16 per cent, making the tax incentives similar to those in the UK. The surprising difference between Germany and the UK is that the financial return available for wind power investments is likely to be greater in the UK, since the payment for ROCs is included as income and since wind speeds are usually significantly more than in Germany. Although in nominal
terms, the feed-in tariff, which gives a standard payment for each kWh of wind power, is larger than what is available to many conventional wind power developers in the UK, this is usually more than compensated by the much larger wind speeds in the UK. This will ensure a higher income stream per installed MW (Toke, 2006, to be published).

The German feed-in tariff is now just under 6 p/kWh (i.e. about 10 eurocent/kWh), compared to a wholesale price with ROCs totally at least 5p/kWh within contracts available in the UK, e.g. for ‘green electricity’. However, the average wind turbine capacity factor in Germany of 18% is significantly less than the 28% generally available in the UK, (Toke, 2006, to be published). The conclusion is that community wind power is more, not less, financially viable in the UK than in Germany.

In Denmark, the wind power cooperatives initiated the present large deployment of wind power. Indeed, much of the development in the early years was done in effectively the backyards of Danish wind enthusiasts, where the politics of ‘alternative energy’ and engineering seemed to go hand in hand (Karnoe 1990). After this, most Danish wind development was farmer-owned, which now makes up the majority of Danish onshore wind power capacity. The subsidy system that supported local ownership ended with the new right wing government in November 2001. Since then, most of the Danish wind power development has been installed either offshore or as a subsidised replacement of smaller and older wind turbines by larger contemporary machines. Over 20% of Danish electricity is now supplied by wind power, and still most wind power capacity is locally owned.

Around 60% of Dutch wind power is owned by farmers, and another five per cent by cooperatives. The Netherlands is a very densely populated country, and there is much planning resistance for wind power. Much of the wind power development that has taken place (providing 2% of Dutch electricity) has come because community ownership has been relatively common.

The importance and success of locally owned wind power in Denmark and Germany is not found in the other major European wind power country, Spain. In Germany and Denmark there has been a significant tradition of local energy activism, often springing from the anti-nuclear movements. However, this has not occurred in Spain. On the other hand, the Spanish authorities arranged favourable ‘top down’ policies for wind power that encouraged utility ownership, but gave significant local authority benefit. Local Spanish municipalities receive considerable sums from local taxation of wind power, which undoubtedly helps acceptance of wind farms. Spain now generates 8% of its national electricity from wind power, and is heading for 20% in 5 to 8 years time. With regard to opposition, Spain is relatively sparsely populated compared to countries of north-west Europe, with its rural economy in decline and is much less subject to campaigns to preserve the status quo.

6. CONCLUSION

In the UK, local opposition to proposed wind power is a major political difficulty for national wind power developers. However, there have been very few applications by local proposers for wind turbines, neither privately nor co-operatively owned. An increase of such schemes would give a much more locally oriented strategy for wind power in the UK, especially since local ownership can smooth the path towards planning consent.

Community ownership needs to be encouraged. In the UK, the Community Renewables Initiative (CRI), which is run by the Countryside Agency and funded by the government Department of Trade and Industry (DTI), has focused solely on very small wind turbines, usually of capacity ~ 10 kW. However, an improved advice network is needed to encourage
community and farmer ownership of commercially sized wind power schemes of multi MW capacity for the sale of power into the grid. Only at such a scale is the cost per unit capacity of machines affordable and the benefits of the UK Renewables Obligation realisable. Nevertheless the knowledge necessary to organise locally owned schemes that is so commonplace in Germany and Denmark (and to an extent also in The Netherlands) is mostly absent in the UK. Hence grants for the feasibility and planning costs of ‘flagship’ commercially sized locally owned projects are needed. When there is a reasonable ‘market’ for financing co-operative and farmer-owned wind power, banks will provide loan funding to local groups and farmers, as in Denmark, Germany, and The Netherlands.

Most benefits of community wind power come from schemes initiated and progressed by local people themselves, with advice from outside consultants as necessary. Such ‘bottom up’ projects have many benefits, which do not materialise from the ‘top down’ projects of national developers. There is a need to disseminate knowledge and confidence about wind power technology as widely as possible, as led to success in Germany and Denmark where there is wide-scale farmer ownership of wind power and where about half of onshore wind power capacity is locally owned.

Co-operative schemes started by local enthusiasts initiated wind power in Denmark and Germany, so, making it apparent that local farmers and farm owners could set up wind power schemes. These experiences give confidence that similar schemes could operate in other countries, including the UK, given local people with the knowledge and enthusiasm to initiate projects.

ACKNOWLEDGMENT
The author is engaged in an ESRC research project into wind power planning and financial issues under the Sustainable Technologies Programme Programme research award RES332250001, ‘Accounting for the Outcomes of Windfarm Planning Applications’.

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