

Italian Bruno Pitta operates an organic farm and six wind turbines as a community wind project.

Photo: PowerWind



David trumps Goliath

Around the world wind energy projects are cropping up that are not planned or operated by big power companies but rather by citizens, farmers, schools, and communities. Community wind projects provide a range of benefits to all those involved.

Few people know the community wind scene better than renewable energies analyst Paul Gipe of Bakersfield, California. “For renewable energy to reach its full potential, to reach the scale needed, the public must participate. They must be a part of the renewable energy revolution,” he says, “Community wind is just one part of community power – it includes solar domestic hot water systems, PV, biogas, and so on.”

The World Wind Energy Association (WWEA) defines community power projects as projects in which the majority of the stakeholders are members of the community. The members also have the greatest voting rights when it comes to making decisions. Furthermore, the community of operators must reap the social and economic benefits arising from the project. The terms distributed wind power, cooperative, or privately owned wind farm are used synonymously with community wind. In general, the following criteria apply: community projects are locally developed and financed and much of the work is done locally. By the same token, the projects are also operated at the local level over many years.

Home-made wind power

The scale of distributed wind power is more limited than that of the utility wind power implemented by large developers and power companies. Distributed wind is often characterized by a high degree of individuality and concentration at a particular location. It is not uncommon for such projects to consist of a single turbine. Small wind power – turbines in the 30 to 100 kW class – are often involved.

The size of community wind projects is determined by local needs and the financing available to the participants. Such projects are not necessarily smaller than conventional wind developments. “Those kinds of limitations would not do justice to the potential of community power,” says Stefan Gsänger, Secretary General of the World Wind Energy Association.

Community wind project operators can be small local groups, the community itself, or local businesses. Specifically, operators could be anything from rural power cooperatives, farmers, schools, and utility companies to indigenous population groups, depending on the cultural landscape. Operators often place more importance on long-term return on investment and energy independence than on the desire to make a quick buck.

Community wind projects often place far more emphasis on environmental impact than purely commercial projects because residents themselves determine the extent and nature of the undertaking. This is precisely why Timm Fuchs, head of the Energy Economics Division at the German Association of Towns and Municipalities (DStGB), looks favourably on the citizen-stakeholder models. “It results in much greater acceptance. Community turbines can also have a positive effect on regional value creation.” It is important for the operating body to be community based. Otherwise, tax revenues flow out of the community.

Danish origins

The idea of community wind originated in Denmark, where as far back as the 1970s citizens built the first community wind turbines. The projects gave rise to a national movement, comprising more than 100,000 projects. The Middelgrunden cooperative is probably

the best known. Founded in 1997, the cooperative operates half of the near-shore Middelgrunden wind farm off the coast of Copenhagen. The other half belongs to DONG Energy. The project comprises 20 Bonus turbines with a total capacity of 40 MW.

In Denmark nearly 90 % of all wind turbines are operated by either farmers or co-ops, while only 12 % are operated by corporations. There are also a number of community wind turbines in the Netherlands and Germany. In the United Kingdom and Spain, on the other hand, nearly all of the wind farms are owned by corporations (see table). Apparently, the different subsidies in different countries — feed-in rates here, renewable portfolio standards and calls for tenders there — either encourage or discourage citizen involvement. For instance, citizens' initiatives cannot afford the expense associated with calls for tenders which are manageable for big project developers and of course for power companies.

In the Netherlands, where wind cooperatives have been increasingly gaining traction ever since the 1980s, the main actors are farmers. Some build projects for their own use, while others have taken to planning large projects or cooperating solely with project developers. In the so-called Zelfleveringsmodel, developed by the Dutch wind co-op Windvogel, cooperatives are the operators, while power companies handle billing and grid services. In addition,

according to this financing programme, members are not required to pay taxes on energy from their community wind projects.

Global importance

Cooperatives play a particularly important role in Germany. In that country, many wind projects were realized in the form of so-called “citizen wind farms”, which were often initiated by project developers. There are, however, projects undertaken solely by citizens. The corporate bodies of such projects have taken the form of associations or limited liability corporations (GmbH), the latter being the more common variant. Limited liability corporations pay less tax, and investors' voting rights depend on their stake in the wind farm. In associations, on the other hand, each member usually has a single vote.

Canada also has a strong community wind movement which is supported in part by Toronto's Ontario Sustainable Energy Association (OSEA). The OSEA helps interested groups develop roadmaps for their own projects. The Community Power Fund (CPF), also based in Toronto, offers assistance with financing. Construction of community wind projects is thriving in Ontario due to the feed-in tariffs available. Quebec and Nova Scotia are also seeing their share of community wind projects thanks to suitable financing

Half of Denmark's Middelgrunden wind farm is owned by a cooperative.

Photo: Siemens





The Tippecanoe Valley School Corporation in Akron, Indiana, commissioned a PowerWind 56 on its campus. The nacelle is embellished with the school logo. Photo: Performance Services

programmes. Australia's first two community wind projects are Mount Barker and Hepburn, which came online earlier this year.

The sole exception

The situation is much different in the USA. Most US wind farms are in the hands of large corporations. The political framework offers no special incentives for community power projects. There are exceptions, however. One example is the Hardin Hilltop Wind Farm, near Jefferson, Iowa. The wind farm was commissioned in 2007 and comprises seven 2.1 MW Suzlon-S88 turbines. The project was developed by coalition of community members and the Edison Mission Group (EMG).

While community wind projects are rather the exception in the United Kingdom, they do exist. There is the Baywind Energy Co-operative in Cumbria, for instance, and the Westmill Wind Farm Co-operative in Oxfordshire. The former, with its 1,300 members, was established in 1996 and is considered the oldest in the UK. The cooperative in Oxfordshire comprises five 1.3 MW turbines and is the nation's largest community wind project. Scotland also has a few projects, among them the Findhorn Ecovillage near Inverness, which operates four Vestas turbines with a total capacity of 750 kW and has made the community a net exporter of electricity. Scotland subsidizes its community wind projects with a range of different financing models. The organisation Community Energy Scotland offers advice to interested communities.

The country overview clearly shows that Germany and Denmark, as well as the Canadian provinces of Ontario and, recently, Nova Scotia are leading the pack in terms of quantity. But there are also community wind projects in Japan and Sweden. South Africa and many other countries are also showing an interest.

Ownership of wind energy projects

Community wind plays a minimal role in the United Kingdom and Spain.

Source: Dave Toke, University of Birmingham

	Farmers	Cooperatives	Corporations
Denmark	64 %	24 %	12 %
Netherlands	60 %	5 %	35 %
Germany	10 %	40 %	50 %
United Kingdom	1 %	1 %	98 %
Spain	0 %	0 %	100 %

Community wind goes to school

One current community wind project is the Tippecanoe Valley School Corporation in the northern Indiana town of Akron. In mid-November, a 900 kW PowerWind 56 went into operation on the school campus there. The turnkey system was turned over to the corporation by project developer Performance Services, Inc. and will meet some 70 % of campus electricity needs.

The school's new wind project serves as a demonstration system and is part of a specially developed renewable energy curriculum. "This is a project that has been in the works since our school board began looking into wind power in September 2008. It's also a green project that will help our school district compensate for decreases in state funding and allow us to reduce expenditures without diminishing programmes or opportunities for students," says Brett Boggs, Superintendent of the Tippecanoe Valley School Corporation.

The PowerWind 60 (850 kW) and PowerWind 56 (900 kW) models in the PowerWind product range are products specially tailored to the needs of community-scale customers. Two other PowerWind 56 turbines are currently under construction elsewhere in Indiana, according to US Business Development Manager Ralph Diehl, from PowerWind in Hamburg, Germany.

Taking advantage of consultation services

For a successful community wind project, a few guidelines should be followed. Initiators should take full advantage of available consultation services, such as those offered in Ontario. In addition, publications like those available from the Windustry network and Windcomm (see "Further information") offer outstanding overviews and checklists.

Furthermore, the project should be made public at the earliest stage possible. Ideally, as many citizens as possible should be involved and given the opportunity to help finance the project. Establishing networks with existing cooperatives offers outstanding opportunities to avoid mistakes made by others and contribute to project success.

Martin Frey

Further information:

Baywind Energy Co-operative: www.baywind.co.uk
 Community Energy Scotland: www.communityenergyscotland.org.uk
 Community Power Fund: www.cpfund.ca
 Northern Power Systems: www.northernpower.com/community-wind/community-wind-basics.php
 Offshore Cooperative Middelgrunden: www.middelgrunden.dk
 Ontario Sustainable Energy Association: www.ontario-sea.org
 PowerWind: www.powerwind.de
 Westmill Wind Farm Co-operative: www.westmill.coop
 Wind Works by Paul Gipe: www.wind-works.org/articles/community.html
 Windcomm/Schleswig-Holstein: www.windcomm.de/Downloads/Leitfaeden/Leitfaeden-Buergerwindpark.pdf
 WindShare: www.windshare.ca
 Windustry: www.windustry.org/cw-case-studies
 World Wind Energy Association: www.wwindea.org