WIND ENERGY

RINGKØBING (Denmark)

Wind energy is not the energy source that immediately comes to mind when thinking about renewable energy in cities. Few cities have enough space within their area to build large, wind farms. You may rather find small, wind turbines on suitable locations within the city's area or see cities doing feasibility studies on this subject. Besides the erection of wind turbines, there are many other ways that cities can promote this renewable energy source. These include applying procurement procedures that favour a certain technology or giving support to organisations that buy or run wind energy plants. The municipality of Ringkøbing – where the wind resources are huge - has made a large effort to include the citizens in the decision making process regarding planning schemes for erection of wind turbines.

GENERAL ASPECTS

Ringkøbing is the capital of Ringkøbing Amt (County), and it has a population of around 17,600. The town is situated in the west of Denmark, north of Ringkøbing Fjord.

You are always aware of the natural environment in this popular tourist region, the trees are moulded by the prevailing westerly wind

Climatic data:

Average mean wind speed (10 m): 6.0 m/s
Annual Mean Temperature: 7.5 °C

CONTEXT

With the growth of wind energy in Denmark there has been a proliferation of wind turbines in areas with good wind resources, in particular in Western and Northern Jutland. Since the mid-nineties, Danish local authorities have had the legal obligation to produce wind energy plans for their area which define the locations where wind turbines can be erected. There is a hierarchy of planning documents; regional strategies are produced by the county authorities and local plans by municipalities. The local authority has reviewed its policies for wind energy during the drafting of its wind energy plan.

Ringkøbing County is flat and adjoins inlets of the sea. Therefore it is quite well suited to wind power. Today, the installed capacity in the municipality is 28 MW, which corresponds to a yearly electricity production of 50 GWh. This means that between 40 and 45 % of the electricity demand in the municipality of Ringkøbing is covered by wind energy.

The municipality has produced plans which are representative of the wind energy plans that are produced throughout Denmark. Ringkøbing has paid particular attention to involving the community in the decision making process.

EXPERIENCE OF RINGKØBING

In the municipality of Ringkøbing there are large numbers of small, 75 kW turbines on lattice towers erected in the late 1980s, which often form an intrusive feature in the landscape. The area has had a history of sporadic development of wind turbines in the landscape, which had caused local reaction to the landscape impact and perceived problems from noise. Two large, wind power farms are present in the municipality. One was build around 1988, and includes 100 turbines ranging from 75 to 220 kW, owned 2/3 by Vestkraft, (the major supply company for electricity and heat in western Denmark), and 1/3 by a private organisation. The other wind power farm includes 29 turbines, all with a nominal power of 225 kW. The counties of Ringkøbing and Northern Jutland have both produced wind energy plans for their regions that indicate strategic locations for wind energy projects and general principles regarding the design of turbines and the allocations of wind energy capacity to be provided in each area. In order to meet the government targets for wind power development, regional plans are required to allocate a capacity to each municipality, dependent on: the wind speed in the area, the constraints, and the perceived opportunities for development. The Regional Plan for Ringkøbing County suggested a target of 40 MW for Ringkøbing Municipality. Thus, this required an increase of 12 MW on the existing capacity. The plan also provides guidelines on other issues, such as: excluded areas (e.g. protected areas and settlements), distances from dwellings, turbine height, noise limits, etc. These exclude about two thirds of Ringkøbing Municipality.

The draft plans

Ringkøbing has prepared its municipal plans for wind energy, taking into account the guidelines in the Regional plans prepared by Ringkøbing County. In the municipality, the planners carried out a sieve process to identify suitable areas. The sieve process identified those areas with sufficient wind speed, and then sieved out areas that were unsuitable because of natural interest, landscape, noise, telecommunication and power lines, proximity to roads or houses, etc.

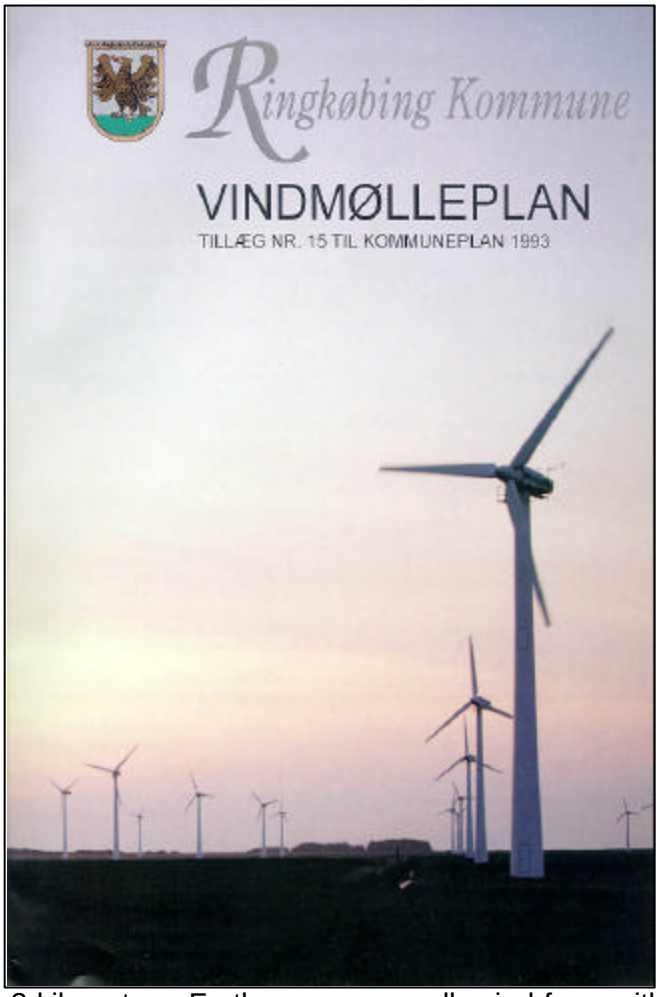
Local plans are detailed plans which indicate areas where turbines can be erected and usually also specifying the precise location of the turbines, their maximum height and capacity, colour, etc. The Ringkøbing Plan was adopted on the third attempt. The first plan only provided for the replacement of the existing turbines. This was not satisfactory to the County authority since it did not provide enough capacity. The second draft proposed more wind power farms, but this hit heavy political opposition from local inhabitants. The final plan went, (like the two first), to an 8 week, public participation period, and it was finally approved in 1997.

This plan limited new development to three areas to keep public objection to a minimum, but existing turbines can be replaced with up to three turbines and increased in size within certain limits. The plan retained the two existing wind farms and identified three areas which together would accommodate 8 turbines with a nominal capacity of 1.65 MW. This also delayed the plan since there was a government edict that they should not identify new MW turbine sites before a government policy on such turbines had been defined. There were a number of key constraints that had to be taken into account, like:

- Total turbine height (to blade tip) is limited to 70 m near the coast, 75 m inland and 50 m near airports. – This is a problem in the southern part of the municipality. The allocations for 1.65 MW turbines, which are 100–120 m high, form an exception from the maximum height.

- A minimum distance from houses is fixed at 500 m from a built up area and 300 m from single dwellings and there must be 2 km between one turbine or group and another turbine or group.

- Small turbines (below 35 kW) which are purely for one's own use are normally permitted, but these must meet the noise limit of 45 dB(A) at residential accommodation.



Currently, local churches are also creating an issue. There is a Danish tradition that one should be able to see the churches in neighbouring villages from one's own village church, and there is a principle that turbines should not be within 500 m of these sight lines. There is a request to increase this distance to 1-2 kilometres. Furthermore a small, wind farm with 29 turbines is planned to be reorganised so the number of turbines will fall to 14, but all with a higher capacity (1.65 MW). Due to the public opposition, no new development is planned apart from the 8 new turbines, the reorganisation of the small wind farm and the replacing of small turbines.

Procedure for dealing with applications:

The developer must demand a construction permit from the county authority, which can impose conditions. The county asks the municipality to give a certificate confirming that the project accords with its plan. Single turbines in open countryside, outside designated areas, are controlled by the county according to the regional and municipal plans. Higher authorities can normally "call-in" plans and decisions to ensure conformity and when there is a disagreement they go to an appeal system at the National Planning Body.

Evaluation and Perspectives

The municipality in Ringkøbing has, through the planning policy, been a good example of municipal promotion of wind energy. The final, wind turbine plans have provided clearly identified sites for new turbines, so that there is no conflict when a developer comes up with a proposal. The planning procedure is hierarchical with a clear framework for ensuring that national and regional issues and considerations are taken into account in the process.

The Danish landscape in that area is flat with few prominent features. Any turbine is going to be prominent but also a feature in the landscape, and appreciation of its impact is very much a matter of aesthetic judgement. A political element in the decision-making is therefore inevitable. The plans have been reviewed regularly. Some years ago, the most modern turbines considered were 150 kW models, whereas now turbines of 750 kW are the norm, and 1.65 MW will become commonplace in the next couple of years. This represents an order of magnitude increase in capacity and more than a doubling of turbine height in 5 years. Since turbine size is a major planning consideration, this has an important effect on the way the plan is drawn up. In the current market with booming demand and rapid technical progress, plans need renewing as soon as they are completed !

Local plans for each of the clusters of turbines identified in the municipal plans are in the process of being produced. These plans raise the issue of whether, in fact, it is the role of the local authority to specify precise turbine locations and turbine capacity, two factors which affect the yield the developer is going to get from the site. Danish plans favour turbines aligned in lines or parallel arrays.

For further information

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