

Wind Farms

Introduction

Ireland has the capacity to generate electricity at the greatest volumes and lowest prices in Europe with major environmental benefit and export potential. This is because of ideal wind speeds. At present only 2% of our electricity is generated from wind.

However, the Government has recently launched a new initiative to promote renewable energy development with the bulk aimed at wind projects. This initiative means a higher price for renewable electricity at an agreed fixed price for a 15-year period.

In some EU countries such as Denmark, it is commonplace for farmers and local communities to invest in a single wind turbine to contribute to their own electricity supply.

By looking at the success of other European farmers, it is clear that developing a wind farm has the potential to be a very lucrative alternative farm enterprise.

The Market

Wind energy is the source of energy that dominates the market of renewables in Europe. However, even though Ireland has one of Europe's best wind regimes, we have been slow to harness the full potential. There are many obstacles for the future of wind energy as a supplement to other sources. However, Wind energy has real potential if you are a land owner with potential to offer a good long-term return on investment, through the sale of electricity to the network. The future growth prospects of wind power in Ireland are reliant on creating a reliable national market on a scale similar to those in Germany and Spain.

Meitheal na Gaoithe is an organisation which aims to promote and facilitate the development of small to medium scale projects promoted by both individuals and communities. See www.mnag.ie for more information.

Steps in Building a Wind Farm

1. Identify Sites with potentially good windspeeds

The fact that a site is windy does not mean it is suitable for wind power development and other factors need to be considered. A site with wind speeds of 8 metres per second or higher is classed as ideal. A site must have a minimum annual average wind speed of about 14 mph. Local wind speed data is available from www.sei.ie. Local weather data is available from Met Eireann. The European Wind Atlas contains information about wind speeds and resources.

2. Determine Proximity to Existing Transmission Lines

Turbines require a physical electrical connection to the national grid. The distance from potential sites to the nearest suitable connection point on the grid should be estimated and the cost of same. High voltage lines can cost thousands of Euro per kilometre. Determine if there is access to the National Grid close by (within 15 km) and if the proposed site will affect communication systems.

3. Secure Access to Land and Address Siting and Project Feasibility

Suitable sites are usually at an elevation of 200 metres or greater or are located close to the coast and without obstacles. It should face a southerly or south westerly direction. Topography, Geology, and access must be taken into account. Ground conditions at the site should be investigated as the installation of turbines involves movement of heavy goods and use of cranes.



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This is one of a series of fact sheets on potential income generating activities.

All fact sheets are available in the Advisory Section of the Teagasc Website www.teagasc.ie

Edited by:
John Whiriskey
Paul McCarthy
Teagasc
Mellows Development
Centre
Athenry, Co. Galway.
+ 353 (0) 91 845200

Teagasc Fact Sheets present a brief overview of a topic. Further detailed advice should always be sought from relevant sources

4. Consider the Environment

Study all environmental information relevant to the site especially County Development Plans and national planning policies. Discussions with local planning officers and established wind farmers are important. Consider if the turbines could be visually obtrusive or actually enhance the area. Check the distances to the nearest dwellings. The nearest dwellings should be more than 400 metres from your land boundaries. Take into consideration noise emission potential. (Typical noise levels from a windfarm 350 metres away are 35-45 decibels). Considerations should also be given to sensitive habitats and species. Examining these factors will help you decide whether a potential site is worth pursuing.

5. Identify Reliable Power Purchaser or Market

Wind is the most competitively priced energy technology currently in the market. AER III & ESB Independent Energy buy electricity from wind farmers. When establishing wind farms, wind energy developers generally approach landowners where they want to build. However, you can contact these companies directly. A map with boundary limits initially needs to be sent into the company who will then assess if the site is suitable. Companies such as Airtricity www.airtricity.ie and B9 energy www.b9energy.co.uk develop wind farms in Ireland.

6. Understand the Economics of Wind Energy

There are many factors contributing towards the cost and productivity of a wind plant. See www.irish-energy.ie

7. Gain Planning Permission

Visit local authority energy agency office and check possibilities and requirements. (Available from local county councils.) Are there wind farm developments already operational in the area or are there developments granted planning permission close by? There is a statutory requirement for an environmental impact statement for potential developments greater than 5MW. If you are confident that you have viable wind speeds a reasonable chance of planning and a grid connection you should apply for planning permission for wind speed measurement using a 40-metre mast. At least 12 months data will be required followed by the correlation of the data.

Costs

Wind farms are not cheap to develop and investment costs are around €1 million per megawatt installed; typical wind farms range from 1.5 to 2.5 MW in size. But they can offer a good return on investment. If this level of investment is too high, then another option is to lease the land to a wind power company, who will develop and manage the wind farm. Otherwise investing in a single wind turbine with other farmers and supplying the local community with electricity could be an ideal alternative route. Installation costs for farm-size wind turbines are lower than for grid-connected and may be a less costly option.

The prices to be paid under the Renewable Energy Feed in Tariff (REFIT) Programme are:

- Large Scale Wind category €57/megawatt hour (MWh)
- Small Scale Wind category - €59/MWh

Links

Meitheal Na Gaoithe

Sustainable Energy Ireland

Commission for Energy Regulation

Irish Wind Energy Association

www.mnag.ie

www.sei.ie

www.cer.ie

www.iwea.com

**Produced by: John Twomey, Teagasc, Farranlea Road, Cork,
Email: j.twomey@corkeast.teagasc.ie ☎ +353 (0)21 - 4545055**