Wind Energy Development at a Community Level
Tipperary Energy Agency, Ireland

Summary

One of the key benefits of renewable energy which is often quoted is the ability for these energy sources to be developed at a local level bringing local benefits. However, it is often the case that this particular benefit can often be the most difficult to maximise.

This paper deals specifically with a community based in Templederry, Co. Tipperary, Ireland which is seeking to develop wind energy as part of the ‘Environmental Protection’ goal within their Community Development Plan. A feasibility study was completed on wind energy, the community group then purchased an anemometer and erected this on a site, selected in conjunction with the Tipperary Energy Agency (TEA).

It is the opinion of the Agency that this is the first community group in Ireland to actually own and utilise an anemometer. The community group can now, and are, assessing the energy resource in their area and will then move to discuss with wind developers now this can be best harnessed such that the benefits to the community are maximised. The community has taken ownership of another of the resources in their area ‘the wind’ and is moving towards utilising this effectively.

End-user area		Target Audience		Technical	
	New buildings		Citizens		Energy efficiency
	Refurbishment of buildings		Households		Heating
	Transport and mobility		Property owners		Cooling
	Financial instruments		Schools and universities		Appliances
	Industry		Decision makers		Lighting
	Legal initiatives (municipal regulations, directives, etc)	■	Local and regional authorities		CHP
■	Planning issues		Transport companies		District Heating
	Sustainable communities		Utilities		Solar energy
	User behaviour		ESCOs		Biomass
	Education		Architects and engineers	■	Wind
	Other		Financial institutions		Geothermal
			Other		Hydro power
					Other

Context

Ireland has seen a significant increase in the level of development of wind energy since the first Alternative Energy Requirement (AER) programme was launched in 1993 in Ireland. There is now 124 MW of wind energy installed in Ireland with the Government’s Green Paper on Sustainable Energy (1999) indicating a target of an additional 500 MW of renewable energy to be installed by 2005. The recent AER V programme, of which the results were announced in February 2002, allocated Power Purchase Agreements to approximately 355MW of wind energy.

However, little or none of this wind energy development has been done by local communities[1] themselves. The capital intensive nature of wind energy development, the format of the AER process and the generally novel nature of wind energy in Ireland have all contributed to the lack of community led wind energy developments.

As projects have been developed typically by non-local wind energy development companies there have often been significant levels of confrontation between the local community and the company during the planning permission application stage. The reasons for confrontation are often complex and it is not the purpose of this paper to deal with why this occurs. However, it is accepted that often having actual local involvement in the development of the project from the outset can help to minimise this confrontation.

There have been some recent developments in this area with wind energy companies seeking to link with the local community to feed back some of the profits of the development. This can be done in a variety of ways ranging from the provision of shares in the project to an annual income being provided to a local community group to utilise for the improvements of local facilities or infrastructure.

There are however, also a number of community groups taking the initiative themselves and actually seeking to assess the resource that they have and then bring this 'local income potential' to developers and negotiate how this could be developed to maximise the benefits to the community. Templederry Community Group in Co. Tipperary, Ireland is one such community and this paper deals with the progress this group has made to date in this regard.

Templederry is a typical rural community in Co. Tipperary, Ireland. It is located in the North Tipperary County Council Local Authority Area which is under the Mid-West Regional Authority.[2]

The community is located on the northern edge of the Slieve Felim mountains and includes many topographical contrasts from the rich agricultural lands to marginalised hilly terrain. It is located between the main urban centres of Nenagh (north) and Thurles (south) in Co. Tipperary but is also within commuting distance of Limerick (c 40 km west).
The population in the area under question based on the 1996 census data was 1,870. The area underwent a significant population decrease between the period 1991-1996 of 5.7%. An even greater decrease was experience during the period 1986-1991 of 7.8% (compared to a National Average for the same period of 0.4%).

While no census data is available for the period from 1996 the Development Plan noted that anecdotal evidence exists that the decline continues in part of the community but may have been halted or slightly reversed in other areas.

The principle employment opportunities in the area are mainly agriculture related and the area has seen a marked decline in numbers working in agriculture and a significant increase in industrial employment. The level of agricultural prosperity varies considerably across the area and can be related to the land type.

[1] In the context of this paper a community is defined as a community of location i.e. a town, village, rural or urban community and is generally taken to refer to communities with populations greater than 100 people.
[2] For the purposes of the Community Development Plan the Templederry Community refers to 5 District Electoral Divisions (DED's) of Latteragh, Kilnacave, Dolla, Templederry and Foilnamon.

The area has significant potential for the development of tourism and related activities based on its scenic attractiveness and unspoilt environment.

Figure 1:

A typical view in Templederry Community.

Undulating (or rolling) hillsides, significant levels of forestry and mainly agricultural land predominate the landscape

Objectives

The aim of this project is to assist Templederry Community Group in the development of wind energy in their Community by providing them with the resources to analyse and determine the most appropriate mechanism for the development of wind energy by the community.

Key Objectives of the project are:
Identify suitable sites in the community for the development of wind energy;
Assist the community in the purchase of an anemometer;
Erect anemometer on site, selected by the community;
Record and analyse the wind speed data in the area;
Assist the community in negotiations with wind developers to ensure maximisation of their involvement in wind development;
Educate the local community with regard to development of renewable energy in the area.

Process

The assessment of the potential wind energy resource at any site is a complex task and particularly so for a small community which has no expertise or general knowledge in this area. It was in this regard that the community sought to link with the Tipperary Energy Agency to ensure that this work could be done at a local level and a mechanism could be developed to increase the knowledge and skills in the local community about renewable energy.

The wind resource was assessed as follows:
Tipperary Energy Agency had produced a wind resource map for Co. Tipperary (as part of an EU Funded project). This was assessed to isolate the Templederry community and the data was overlayed on a local topographical map. This resulted in a total of 20 potential sites being identified. Each site was visited individually and assessed in terms of elevation, ownership, know archaeology, proximity of dwellings, grid connection, aspects and openness to prevailing winds and transport access.

A total of 5 sites were selected which were considered to be most appropriate for development. These were presented to the community and they were requested to select the site which they preferred.

As a result of this process the community selected a site which is close to the boundary of the community. The site is predicted to have reasonable wind speeds, grid connection and ease of access. Another reason for the selection of this site is that the community felt that the development of this site would help to mark the entry into their community and identify it as being environmentally friendly.

On-Site Wind Monitoring

As noted in the introduction it is often difficult to know when a community should become involved in the development of a project. Often the community is simply consulted when a project has been identified and planning permission is being submitted to the Local Authority. Ideally the community should be involved or participate as much as possible from the initial stages of development, even the concept stage if possible.

This is a key aspect of this project in that the community have been actively involved in the development of the project from the very beginning. Indeed the community have been involved in the actual erection of the anemometer on the selected site. A team made up of the land-owner, members of the Community Group and representatives from the Tipperary Energy Agency and Tipperary Institute erected the anemometer on the site.

The Tipperary Energy Agency will provide technical advice and assistance to the community in downloading the data and assessment using specific software. Once a range of months of data has been assessed the community group can initiate discussions with potential developers who may wish to become involved in community led wind energy developments.

Figure 2:

Local members of Community Group being trained on operation of the data logger following erection of an anemometer.

Financial resources and partners

A Community Development Plan (CDP), funded by the Tipperary LEADER Group, which was produced in 1999 by the community had a particular focus on environmental protection and renewable energy. During the development of the plan the group started a partnership with a local energy management agency, the Tipperary Energy Agency (TEA), to assist in drawing up of the plan and subsequent actions. An initial resource assessment was completed for the CDP and following on from this funding was received from the County Enterprise Board (North Tipperary) to complete three feasibility studies on wind energy, anaerobic digestion and wood fuel. This paper will focus on the work done in the wind energy area.

Results

It should be noted that given the current conditions in relation to wind development in Ireland in terms of price paid per kWh of electricity produced the Templederry region could not be considered to be ideal. There are few areas with average wind speeds above 8.5 m/s and indeed it is projected that the wind speeds in the site selected will be in the region of 6.5-7.5 m/s. However, the community has sought to link with relevant lobby groups such as Meitheal na Gaoithe (Irish Wind Farm Co-operative) to seek specific support for community based projects such as theirs to improve their economic viability.

The site selected has the potential to accommodate at a minimum two 850 kW wind turbines.

Figure 3:

View from proposed wind site.

This view is looking South West – the prevailing wind direction in the area.

While wind energy can be said to have moved into the main stream in terms of technology and access to finance the initial capital intensity of the industry often makes community groups unsure as to how to overcome this barrier.

As with similar rural communities in Ireland a significant excess of investment capital does not exist within the community to fund the development of this project. A Community Co-operative has been formed and a specific Wind Energy Co-operative will lead the development of this project. There may be opportunities for the Co-operative to raise the capital through loans but the risk levels and rates at which capital could be borrowed would be excessive. At present it would seem therefore that the community will have to link with a wind energy developer to move the project to implementation.

There are a number of mechanisms through which this could be achieved and these are currently beginning to be assessed.

The mechanism which will be selected must:

- ensure that level of community ownership is maximized;
- provide for least difficulty in terms of administration;
- is transparent and agreed within the community;
- provide an equal opportunity for investment and return within the community.

Even a 10 % stake within the community in the initial proposed project could require a total of €170,000 to be raised. It is envisaged at present that a co-operative will be established as a mechanism for managing community input and ownership. This co-operative will manage the investment and potential profits from the wind development.

To date there are no physical environmental benefits i.e. Tonnes of CO_2 reduced. However, the level of environmental awareness has increased, particularly due to the erection of the anemometer. The Agency is currently working with the community group to determine the level of green house gases in the community and how the development of renewable energy and forestry can abate these emissions, in line with our National Kyoto requirements.

Lessons learned and repeatability

The community group is of the attitude that the initial site would be a stepping stone to the development of other sites within the community. This will be a point of discussion between the potential developers which the community will engage with in the future.

In addition, the community are also progressing projects in the area of wood for energy, anaerobic digestion and sustainable housing. Indeed, the community is not only focusing on energy projects with other initiatives particularly in the area of tourism also being progressed.

As the part of the process of increasing the knowledge of the community in the renewable energy area a number of the community group have been encouraged to complete a Certificate in Renewable Energy which is being run at the Tipperary Institute (www.TippInst.ie). This certificate is aimed at those who wish to develop renewable energy projects and is run on a part time basis over a 6 month period. Four individuals from Templederry have completed this Certificate and there is now an increased knowledge base within the community which can develop this, and other projects further.

The Community Group has liased with the Local Authority at all stages of the development of both the wind energy and other projects. It must be noted that the Local Authority have been very supportive of the efforts of the Community and this co-operation and assistance will continue into the future.

Perhaps the greatest difficulty faced by the community is the lack of practical support for community based development of renewable energy projects. In other countries such as Denmark and Germany there have been many initiatives where local communities have developed projects themselves. The communities in these countries have been able to avail of such support mechanisms as:

- low interest loans;
- higher sales price of electricity;
- net-metering;
- capital grant assistance;
- mechanisms for the formation of wind guilds.

Many of these mechanisms do not exist in Ireland and therefore the focus and drive of the Templederry Group to seek to maintain a high level of community involvement in the various projects that are being pursued is somewhat unique.

The development of this project was initiated in early 2000. It has taken over 24 months to reach a stage where an anemometer has been erected to assess wind speeds. In comparison to a purely non-community project this would be considered to be excessive. However, within this 24 month period the community group has also assessed a range of other sites, increased the knowledge within the community of the potential for the development of renewable energy, educated four individuals within the community on renewable energy development, purchased, received planning permission, erected and began to use an anemometer, created links with a wide range of relevant organisations in the industry and identified some of the key barriers to be overcome to progress the project.

An overarching activity which has also been involved has been continuous dialogue and discussion within the community on the project. In project management terms the critical path analysis of this project had to include a significant level of time for this aspect of the project. If this was not included the potential for developing the projects long-term benefits for the community may have been more difficult to achieve.

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