A Strategic Analysis of the Constraints to the Development of Wind Energy in Ireland.

By

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Abstract

A Strategic Analysis of the Constraints to the Development of Wind Energy in Ireland.

Wind farms are a relatively new feature to the Irish landscape and the number and size of these are set to increase considerably in the coming decade as Ireland is compelled to reduce greenhouse gas emissions under the Kyoto Protocol. Despite the obvious global benefits of renewable energy there are adverse local impacts associated with wind farms, which have to be considered.

There are various parties who have a direct or indirect role in the development of the wind energy industry and they often have conflicting views and positions.

This thesis identifies these main stakeholders and examines how they interact within the present regulatory framework for planning and energy. It then examines the difficulties these parties have experienced with these policies and goes on to suggest possible modifications to the current system. If implemented, these would help reduce some of the development constraints the industry has already witnessed.

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Methodology

Scope of Dissertation

This report examines the constraints to onshore (i.e. land-based) wind energy development in the Republic of Ireland. Although offshore wind energy is likely to play a major role in fulfilling Ireland's commitments to European Union renewable energy targets, to date there is no off -shore wind farm operating in Irish marine waters. However, several exploratory studies are presently being conducted in the Irish Sea to examine the feasibility of these installations.

General Layout

This report can be considered to consist of 6 stages, these are:

- Background of wind energy development within the energy sector
- Local and global impacts of wind energy.
- Analysis of the current planning situation.
- Establishing the views and positions of stakeholders
- Identifying the constraints
- Discussion of these constraints and suggestion of possible resolutions.

Research Methods

Various methods were used to obtain the required information and these are described in the context of the general layout given above.

Background of wind energy development within the energy sector.

In order to determine what the constraining factors to wind energy development were, it was first necessary to establish: Ireland's present and projected energy demands, the current deployment of wind energy in Ireland and the driving factors for increased renewable energy penetration in the electricity market. This required an extensive literature review of European and Irish legislation, energy balance figures and material from the Renewable Energy Information Office in Bandon Co. Cork.

Local and global impacts of wind energy

This again required an extensive literature review, mainly from European Commission and international wind association websites and also through the ETSU reports on ecological impacts of wind farms. Environmental Impact Statements from several Irish wind farms were also examined.

Analysis of the current planning situation.

In order to assess the current planning climate for wind energy, a questionnaire was sent to all planning authorities to determine statistics for wind farm applications and Development Plans. A review of all available files in An Bord Pleannala and an overview of all planning appeals decided by them was made.

Establishing the views and positions of stakeholders

There are several stakeholders in the wind industry and these are listed below:

Government The policies and positions of the relevant government departments were examined through Strategy Statements, legislation relating to renewable energy, state sponsored reports and strategies, and through numerous telephone conservations with department officials.

Planners The proceedings to several renewable energy planning conferences were reviewed, planning official's reports to An Bord Pleannala, guidelines issued by the Irish Planning Institute and the Dept of the Environment, local authority's Development Plans and the DELG website were all examined.

Developers The position of the Irish Wind Energy Association (which represents most large-scale developers) was established through a meeting with the chairperson of the IWEA. Likewise, the position of the small-scale developers was determined through several telephone conversations with Meitheal Na Gaoithe. A survey was also sent to most developers in the country.

ESB and Eirtricity These companies were contacted by phone, surveys were sent to them and existing literature in the public domain were examined.

NGOs All environmental NGOs were contacted by telephone, several reports were obtained from them and a survey was sent to each to determine their position on specific issues.

Local Communities The views and positions of local communities weren't surveyed due to the number of people involved. However, their objections to wind energy were noted in planning objections and appeals to An Bord Pleannala. Also a review of public opinion surveys carried out in the UK and internationally was carried out

It should be noted that several individuals requested, when giving an opinion, that they wouldn't to be identified. Where these opinions occur in this document this is indicated as a personal communication and denoted by "(pers. comm.)". No mention of the source of these opinions is given in the reference section.

Identifying the constraints

From the literature review and the initial telephone conversations, several constraints were immediately apparent. Not all of these are examined in this report for a number of reasons, either the author felt the issues had already been thoroughly examined in other documents (e.g. the Renewable Energy Strategy Group report) or that not enough information was available to predict what constraining influence would arise from a developing situation. (This is particularly true in the area of electricity deregulation). The constraints that were felt to be relevant were:

- The AER tendering process
- The Planning System
- The issue of Designated Areas

These are discussed in detail in Chapters 5, 6 & 7.

Discussion of these constraints and suggestion of possible resolutions

Following analysis of these constraints, a number of possible resolutions are suggested which would reduce the constraining influence of these factors. These resolutions are aimed at trying to find a middle ground where the views and positions of all stakeholders are addressed within the present regulatory system, without an unacceptable compromise being offered.

List of Abbreviations

AER	Alternative Energy Requirement
CCGT	Combined Cycle Gas Turbine
CER	Commission for Electricity Regulation
CHP	Combined Heat And Power
DELG	Department of the Environment and Local Government
DPE	Department of Public Enterprise
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
IPCC	Intergovernmental Panel on Climate Change
IPCC	Irish Peatland Conservation Council
IWEA	Irish Wind Energy Association
IWT	Irish Wildlife Trust
MCI	Mountaineering Council of Ireland
NCCS	National Climate Change Strategy
NPW	National Parks and Wildlife
pNHA	Proposed National Heritage Area
PPA	Power Purchase Agreement
RES	Renewable Energy Source
RESG	Renewable Energy Strategy Group
SAC	Special Area of Conservation
SPA	Special Protection Area
TLAF	Transmission Loss Adjustment Factor
TPER	Total Primary Energy Requirement
UNFCCC	United Nations Framework Convention on Climate Change

Introduction

In view of the threat of global warming and its possible consequences, most developed countries, as well as Ireland, are committed to reducing emissions of greenhouse gases under the Kyoto Protocol. As the energy sector is one of the main sources of these emissions through the combustion of fossil fuels, increased use of renewable sources of energy is seen as practicable means of achieving this reduction.

At present there is approximately 105 MW of installed wind generation capacity in Ireland. The Department of Public Enterprise has set an interim target of an additional 500 MW of green electricity by 2005. However, by 2010, each Member State will be obliged to supply 12% of its energy requirements from renewable sources under European Law. This will represent a significant increase in wind energy deployment and extensive planning will be required if this target is to be achieved.

In order to promote the development of renewable energy, the Department of Public Enterprise conducts competitions for power purchase agreements with the National grid in the form of the Alternative Energy Requirement (AER) scheme. This tendering process aims to deliver specific renewable energy generation targets at the lowest cost to the end consumer. To date, the AER scheme hasn't considered the planning aspects involved and both developers and planners have experienced difficulties with the process.

Although wind farms have obvious global benefits, there are negative local impacts associated with them that often become issues of contention at the planning process. In the absence of a national strategy, Planning Authorities have to consider the merits and local impacts of each proposal on a case-by-case basis. Most decisions are then appealed to the independent planning board (An Bord Pleannala), which delays the process further. This delay then puts pressure on developers who are subject to deadlines under the AER scheme.

Thus, there is an apparent divergence of the Department of Public Enterprise's (DPE) proactive energy policy and the Department of the Environment and Local Government's (DELG) conservationist planning policy. The various stakeholders in the wind industry have to operate within this regulatory framework to achieve often-conflicting objectives.

This thesis will examine these and other constraining factors in relation to the views and positions of the diverse stakeholders who play a vital role in the full and responsible development of the wind industry. It will also suggest possible resolutions that would help establish a convergence of governmental policies without compromising the aims and objectives of these stakeholders.

In a study recently conducted by the Renewable Energy Strategy Group (under the remit of the DPE) entitled *"Strategy for Intensifying Wind Energy Deployment"* the constraints to increased wind energy deployment were identified and recommendations were made to address these. This study was a "top-down" approach and principally involved officials representing various government bodies and other professional associations.

This thesis examines the views and positions of these stakeholders as well as those who weren't represented. It is, therefore a more "bottom –up" approach and as a result focuses on different issues than those examined by the Strategy Group.

Chapter 1

International, European and Irish Climate Change Strategies

1.1 Global Warming

The issue of global warming, its causes and consequences, has received considerable attention in the media, the scientific community and political forums in the last decade. It has become clear that changes in the atmosphere are recent and are a direct result of human activity. The major concern surrounds the build-up of greenhouse gases. The earth has a natural carbon recycling system, but industrialisation has overloaded this system resulting in net annual increases in the concentration of these gases. This has lead to fears of a gradual warming of the earth with possibly disastrous consequences. While its effects are global, and global coordination is required if the problem is to be solved, the problem is created by individuals operating under national conditions and within national systems.

Studies (McWilliams 1991) have been carried out to predict the impacts that an average annual temperature rise of between 1°C and 3°C would have on Ireland's natural systems. These concluded that the country would share in the enhanced agricultural production potential of northern Europe. The production options available would be increased, new crop options would be available, and the overall costs of agricultural production would be less than is the case at present. Enhanced aquaculture opportunities were also envisaged.

On the downside, serious flooding would occur more frequently, last longer and be more widespread. Climate change could also lead to water shortages occurring regularly and the duration of low water levels would be longer than at present. In addition, peatlands would suffer serious damage as a result of increased summer soil water deficits.

Any rise in the mean sea level will be associated with the increased severity of storms in coastal waters. Storms and storm surges will have a major impact throughout Ireland but particularly on the west coast. The largest proportion of storm-affected land is on the west of Ireland, but the most vulnerable areas may be in the east, where much of the shoreline has been developed for one purpose or another.

The most recent figures released by the Intergovernmental Panel on Climate Change (IPCC TAR 2001) predict a mean global temperature rise of between 1.4°C and 5.8°C by the year 2100. This suggests that the possible effects of global warming would be worse than initially predicted.

1.2 The Kyoto Protocol

In the late eighties, international scientists became concerned by the perceptible changes in the global climate and suspected they were caused by anthropogenic actions. In 1990, the Intergovernmental Panel on Climate Change (IPCC) published its assumptions (IPCC FAR 1990) on the possible outcomes of climate change using modelling techniques. These studies proved to be catalyst for international action, and in 1992 an international summit was held in Rio de Janeiro, Brazil. Ireland signed the UN Framework Convention on Climate Change at this "Earth Summit" and ratified it in 1994. This is one of the most important environmental agreements with global application and has been ratified in over 180 countries and, together with the Kyoto Protocol, is now a critical element in the framework for sustainable development policies at global, national and local levels.

In Kyoto in December 1997, developed countries agreed legally binding targets to achieve overall reductions of over 5% of six "greenhouse gases" (namely, carbon dioxide CO_2, methane CH_4, nitrous oxide N_2O, hydroflurocarbons HFCs, perfluorocarbons PFCs, and sulphur hexafluoride SF_6) in the period 2008 – 2012. These targets represent the first step towards combating climate change and will pave the way for stronger commitments in the future. Ireland, with all other EU Member

States, signed the Kyoto Protocol on 29th April 1998. The protocol will enter into force when 55 parties have ratified it. European Union Member States intend to ratify the Protocol in 2002 – the 10th anniversary of the Rio summit.

At present, the future of the Kyoto Protocol is in doubt or at least in "suspended animation" for a time. At the Sixth Session of the Conference of the Parties (COP6), which took place in The Hague in November 2000, the Parties failed to reach agreement on several key issues. It was hoped to resume talks in May 2001, however, following the change in Presidency in the United States, the American government withdrew from the agreement in March 2001. As the United States produces approximately 25% of the global emissions of greenhouse gases, their withdrawal is a significant blow to the chances of the desired reduction in emissions being achieved. It is hoped that the American administration will reconsider its position under pressure from the EU and other developed countries.

1.3 EU Policies Relating to Renewable Energy

In Kyoto, the EU adopted the most ambitious target of 8% reduction in greenhouse gases. A "burden sharing" agreement has been reached on the distribution of this overall target between all Member States, taking into account a number of factors, such as projections for future greenhouse gas emissions and economic growth predictions, so as to achieve an equitable distribution of the overall burden involved. Under this arrangement, Ireland has agreed a national target to limit the increase in its greenhouse gas emissions to 13% above 1990 levels in the period 2008 – 2012. **Table 1.1** shows this "burden sharing" arrangement.

In the same year as the Kyoto summit, the European Commission published its White Paper on Renewable Energy (COM (97) 599l). In this it was recognised that the energy sector was a major contributor to greenhouse gas production. The main objective of this White Paper was to achieve a 12% Total Primary Energy Requirement (TPER) penetration of renewable energy sources in the Union by the year 2010. (TPER

is a measure of all energy consumed nationally. It includes energy consumed in transformation (e.g. electricity generation and oil refining) as well as distribution processes).

Table 1.1

EU Burden Sharing Agreement

Member State	% Reduction in Emissions
Austria	- 25%
Belgium	- 10%
Denmark	- 25%
Finland	0
France	0
Germany	- 25%
Greece	+ 30%
Ireland	**+13%**
Italy	- 7%
Luxembourg	- 30%
Netherlands	- 10%
Portugal	+ 30%
Spain	+ 17%
Sweden	+ 5%
UK	- 10%

(Source ERM 1998)

Although renewable energy represented 5.7% of total electricity generation in Ireland in 1995, renewable energy sources contributed only 1.7% of TPER in that year. This contribution was well below the 1995 European average of 5.3%. The EC White Paper target envisages some 23.5% of electricity production from renewable sources of energy with over half of this being produced from hydro – the most efficient of the renewable energy technologies. As the potential for new large-scale hydropower plants in Ireland is limited, no significant increase in electricity production from this source can

be expected. Wind energy is seen as the most likely technology to provide the additional required capacity.

As electricity generation accounts for such a large proportion of greenhouse gas production the EC recently adopted a proposal for a Directive of the European Parliament and of the Council *on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market*. The indicative target for Ireland is that 13.2% of total electricity produced will be derived from renewable energy sources. The target for the EU as a whole is 22.1% which translates the 12% White Paper target into a specific contribution from the electricity sector.

1.4 National Strategies

Two critical documents have been published by the present Irish Government, which will guide the policies and programmes which are aimed at fulfilling the country's international and European commitments as outlined in the preceding sections. These are:

- ***The Green Paper on Sustainable Energy***
- ***National Climate Change Strategy***

The Green Paper on Sustainable Energy

In September 1999, the Department of Public Enterprise published the Green Paper on Sustainable Energy (DPE 1999). This indicates how Ireland will progress towards meeting its energy requirements in an environmentally and economically sustainable way. Amongst other programmes and measures aimed at the transport, energy and industrial sectors, it is intended to create the circumstances and conditions that will stimulate the deployment of renewable energy sources. In order to achieve this several approaches are outlined:

- **Increased targets** – for the generation of electricity from renewable energy sources – the interim target for 2000-2005 is 500 MW of additional generating capacity.

- **Modified AER scheme** – the present Alternative Energy Requirement process will be changed to take account of experience to date and application of the public service obligation provisions in the Electricity Act 1999.
- **Electricity market liberalisation** – Green electricity will be able to be sold directly to final customers.
- **Addressing deployment constraints** – such issues, as planning and grid connection will be examined in detail.
- **Local involvement** – encouragement of local participation in renewable energy development
- **Fiscal measures** – Tax relief and other fiscal measures will be developed in favour of renewable energy.
- **Promotion of research and development** – a revitalised approach to the promotion of the research into the development of renewable energy sources.
- **Institutional arrangements** – the role of the Irish Energy Centre and its Renewable Energy Information Office will be refocused to support the rapid development of renewable energy.

National Climate Change Strategy

In the National Climate Change Strategy published by the Department of the Environment and Local Government (DELG 2000) the government has outlined an approach it will adopt to decouple economic growth from increased greenhouse gas emissions.

All economic activity that requires energy consumption, as well as certain non – energy activities in areas such as agriculture, produces greenhouse gases. The principle sources of these emissions in Ireland are:

Energy: The energy sector is the largest source of Ireland's CO_2 emissions, from fossil fuel combustion in the production of electricity.

Transport: The primary emission in this sector is CO_2 as a result of fuel combustion, and some N_2O is produced in combustion and catalytic converters. Transport is generally proving to be the most difficult sector in which to achieve controls on greenhouse gas emissions due to rising vehicle numbers.

Industry: The industrial sector mainly contributes to greenhouse gas emissions through energy use, including direct consumption of fossil fuels and use of electricity and through emissions from industrial processes.

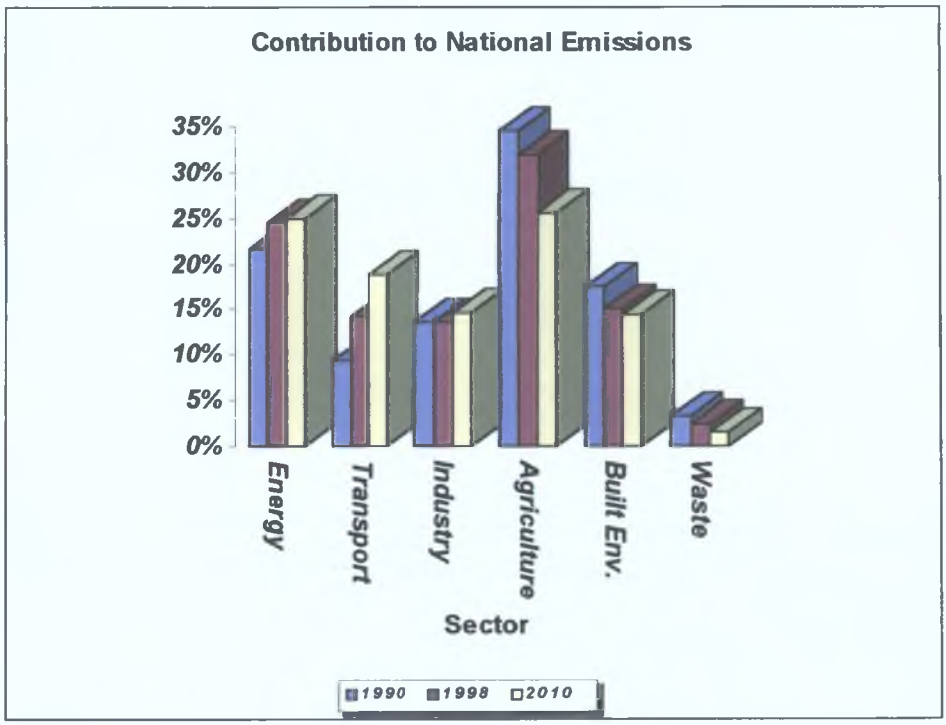
Agriculture: Agriculture emissions of greenhouse gases are very significant in the Irish context. Agriculture is the largest source of CH_4 and N_2O with the main sources being enteric fermentation (the digestive process of ruminants) in the livestock herd. The quantity of nitrogenous fertiliser spread and the breakdown of this in the soil is the main determinant of the amount of N_2O emitted from agriculture.

Built Environment (Commercial/Institutional and Residential Sectors): Emissions of greenhouse gases attributable to these sectors are almost exclusively CO_2, from energy use consumed domestically for space heating etc. and electricity consumed in appliances.

Local Authorities and Waste: Emissions from waste are primarily of CH_4, which arise from the anaerobic decomposition of carbon waste in landfill.

Chart 1.2 details these sources and their past, present and predicted (%) contributions to **total** greenhouse gas (i.e. CO_2, CH_4, N_2O etc.) emissions assuming no action is taken.

Chart 1.2



(**Source** National Climate Change Strategy 2000)

Due to the combustion of fossil fuel fossil to generate electricity, the energy sector is the largest source of Ireland's CO_2 emissions and is discussed in detail in **Chapter 2.** The measures that will be introduced to control greenhouse gases in this sector are:

(a) Fuel switching

(b) Promoting energy efficiency

Fuel Switching:

This involves switching to less carbon intensive fuels without affecting overall levels of electricity generation or use and it is envisaged that this will be achieved by:

- The closure of Moneypoint coal fired generating station and replacing it with more efficient combined cycle gas turbines (CCGT).
- Most of the existing peat generating stations being replaced by three modern fuel-efficient peat fired plants.
- Maximisation of the use of combined heat and power (CHP) plants.
- It will see a much greater penetration of renewable energy (especially wind energy) in the electricity sector.

Energy Efficiency

As the liberalisation of the electricity market has reduced the incentive that existed for the ESB to promote a demand side management (DSM), the Irish Energy Centre will be operate an enhanced DSM programme, with the cost to be supported by all players in the energy supply market.

Chapter 2

The Growth of Wind Energy in Ireland's Energy Sector

The buoyant economy over the last number of years was reflected in a rapid growth in demand for electricity. Demand has grown at an average of 5% per annum over the last ten years, and in excess of 6% in 2000 (ESB 2001). This has occurred at a time when Ireland is committed to curbing its greenhouse emissions under the Kyoto Protocol.

This chapter examines this growth in energy demand and the changing mix of fuels that will be needed to sustain this growth. Renewable energy, and especially wind energy, will play a significant role in both satisfying this energy demand and curbing greenhouse gas emissions.

2.1 The Energy Sector

The energy supply sector contributes to CO_2 emissions through fossil fuel combustion to generate electricity; the quantity of greenhouse gases emitted depends on the fuel type used. In this sector the two main factors that define the relationship between economic growth and increased emissions are:

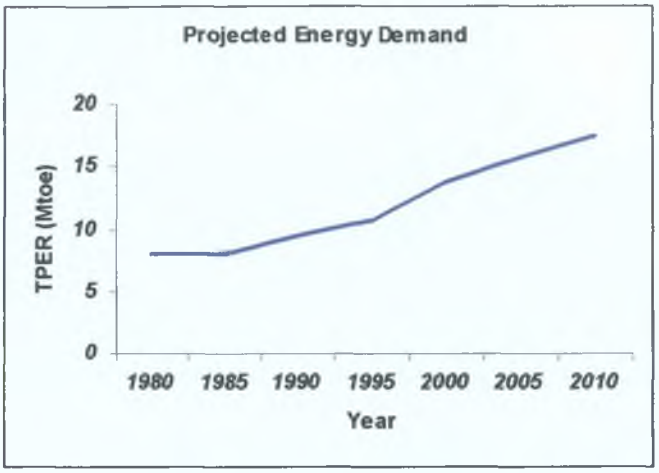
- ***Energy Demand***
- ***Fuel Mix***

These are discussed in the following sections.

2.1.1 *Energy Demand*

The Irish energy sector has seen considerable changes over the last 20 years and this is likely to continue for the foreseeable future. Due to sustained economic growth, Ireland's primary energy consumption has increased by 58% since 1980, and is projected to increase in line with economic growth by a further 37% by 2010 in a business as usual scenario (Green Paper 1999). **Chart 2.1** shows this predicted growth in energy demand.

Chart 2.1



(Source **DPE Green Paper 1999)**

Total electrical output is expected to almost double from 1995 to 2010, reflecting this economic growth. However this is not expected to result in a parallel increase in CO_2 emissions, as international experience indicates that a shift in generation mix towards gas, CHP and renewable energy can be expected.

As a result of the increase in energy requirement experienced, Ireland has already exceeded the 13% increase in emissions allowed under the EU burden sharing agreement (discussed in **Section 1.3)**. The level of emissions is expected to increase to 37.3% by 2012 if no action is taken (DELG 2000).

2.1.2 Fuel Mix

In the eighties, approximately 20% of Ireland's energy demand was supplied from indigenous sources (mostly peat and hydro). Due to increased demand and diminishing natural resources this has dropped to 14% in 2000 and is predicted to drop as low as 6% by 2010 in a business as usual scenario. Ireland is now the most import dependant country in the EU which has serious implications for the economy in the event of another fuel crisis (Dillon 2000).

There has been a significant change in the fuel mix used in Ireland since 1980 and this change will continue through to 2010 and beyond. This variation is due to several factors which include:

- Increase in energy demand
- Diminishing indigenous supply of peat
- Natural gas finds in Kinsale and Corrib fields.
- The commissioning of Moneypoint coal-burning generation station in 1986.

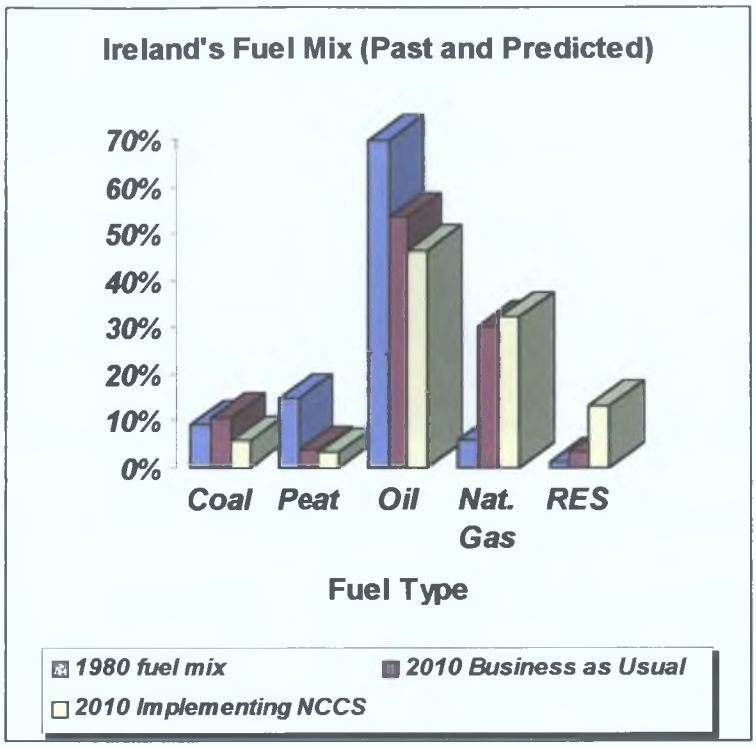
Thus, the nature and content of Ireland's fuel mix is always changing, albeit in a gradual fashion, and is usually dependant on circumstances beyond its immediate control (e.g. oil prices etc.).

The **Chart 2.2** shows this variation in fuel mix:

- In 1980
- In 2010 assuming a business as usual scenario
- In 2010 assuming implementation of the National Climate Change Strategy (DELG 2000).

As well as increased renewable energy penetration, the National Climate Change Strategy recommends that that Moneypoint coal fired generating station be replaced with CCGT generators, an increased reliance on natural gas and reduced usage of peat as a fuel. These recommendations will change the nature of electricity generation in this country considerably.

Chart 2.2



(Source Green Paper, Energy Balance & NCCS)

2.2 Wind Resource

In 1997, a study was carried out (ETSU/ESBI 1997) to provide an assessment of the likely practicable renewable energy resources in Ireland taking account of economic, planning, environmental and other relevant considerations. The study estimated the theoretical wind resource using:

- Long term data from meteorological stations in Ireland
- Height of the terrain above sea level
- Effect of the surface roughness changes between land and sea and other large bodies of water.
- Direction of predominant slope of the land

As would be expected for a country exposed to the predominantly south-westerly winds from the Atlantic, mean wind speeds are generally high. The range of estimates was from 6.4 to 12.3 m/s with the average annual mean wind speed of 7.3 m/s.

The report estimates a resource of 179 GW with an output of 458TWh/y is in areas at or above the 7m/sec. "cost effective" wind speed, this is approximately 19 times the current total installed generating capacity of the country. As Ireland has relatively high wind speeds and low population density; this means that the resource, having taken into account all physical and environmental constraints, is still extensive. The limit of how much this resource can be exploited is understandably the ability of the electricity network to accept this new generation. The intermittent nature of wind power means that only a certain proportion of total capacity can be derived from wind if the network is to maintain operation.

A recent study (Nicholson 1999), commissioned by the IWEA, indicates that, based on international experience and provided the grid infrastructure is in place, there are no technical problems expected from development to a level of 20% wind energy penetration. Somewhere above this level (in the 20-30%range) would require measures that would effectively increase the cost of additional wind energy capacity.

However, a similar study conducted by the ESB (ESB 2000), indicates that a wind energy penetration level in the order of 5% to 7% is achievable on the national electricity system by 2005. With suitable interconnection facilities with Northern Ireland and the UK this level of penetration could be increased but will be subject to further studies.

2.3 The Renewable Energy Strategy Group Report

The Green Paper on Sustainable Energy required the establishment of a Renewable Energy Strategy Group to examine all aspects of, and barriers to, the further deployment of renewable energy technologies. This group first examined on-shore wind energy and its report, *Strategy for Intensifying Wind Energy Deployment* (RESG 2000), was published in June 2000. Throughout this thesis this document is referred to as "the Strategy report"

The principal conclusion of the Group is that three key elements, *Electricity market, Electricity network and Spatial Planning* need to be integrated into a plan led approach to wind energy deployment. Arising from the Group's deliberations, a number of recommendations are proposed under these headings. This plan led approach sees spatial planning considerations as crucial in determining suitable areas where wind farms may be accommodated. These decisions should be informed by the availability of the wind, the strength of the electricity networks, and landscape and other planning considerations. The locations identified in this manner should then determine the appropriate grid infrastructure required. Within the context of the agreed planning framework, the market mechanisms chosen should aim to minimise the cost of achieving the target deployment of wind energy.

2.4 Wind Farms in Ireland

The presence of wind farms is a relatively new phenomenon on the Irish landscape. In 1992 the first commercial wind farm was commissioned at Bellacorrick, Co. Mayo; it consisted of 21 turbines with a combined output of 6.45 MW. This remained the only wind farm supplying the national grid until 1997 when a further six were commissioned (four with funding from AER I and two with the aid of EU THERMIE grants) with a combined generating capacity of 44 MW. Since then a further ten have been built under AER I, AER III and THERMIE grants. Two wind farms have been built to directly supply consumers after deregulation of the electricity market in February 2000. **Table 2.1** summarises wind farms currently operating in Ireland. At present there

are 19 wind farms operational in the country at present. The combined installed capacity is 103 MW, which represents approximately 2.2% of Irelands total installed electricity generating capacity.

Table 2.1

Operational Wind Farms in Ireland

Year	Site	Location	Installed MW
1992	Bellacorrick	Co. Mayo	6.45
1997	Barnesmore	Co. Donegal	15
1997	Altagowlan	Co. Leitrim	1.2
1997	Cark	Co. Donegal	15
1997	Tullymurray	Co. Leitrim	4.8
1997	Kilronan	Co. Roscommon	5
1997	Cronalaght	Co. Donegal	3
1998	Drumlough Hill	Co. Donegal	4.8
1998	Crockahenny	Co. Donegal	5
1999	Inverin	Co. Galway	2.64
1999	Curabwee	Co. Cork	4.62
2000	Cronalaght II	Co. Donegal	1.98
2000	Anarget	Co. Donegal	2
2000	Culliagh	Co. Donegal	11.88
2000	Lenanavea	Co. Mayo	2
2000	Beal Hill	Co. Kerry	1.65
2000	Largan Hill	Co. Roscommon	6
2001	Beenageeha	Co. Kerry	3.86
2001	Milane Hill	Co.Cork	6

Chapter 3

The Environmental Impacts of Wind Energy

3.1 Beneficial Global Impacts

As seen earlier, Ireland's fuel mix is changing as energy demand grows to sustain the current economic growth and this is compounded by the diminishing national resource available to supply this demand. This creates a favourable environment to promote the development of alternative energy as a means of increasing security of energy supply. More importantly, in the light of our commitments to the Kyoto Protocol, these sources of energy emit little or no greenhouse gases to the atmosphere.

Not all fossil fuels are equally harmful as shown in **Table 3.1** below. Peat burning emits about 4.6 times as much CO_2 per kWh of electricity produced, as does CCGT gas fired stations. Emissions from coal and oil are 2.6 and 2.1 times as high respectively.

Table 3.1

CO_2 Emissions and Price per Kilowatt for different Fuel Types

Generation Source	Emissions (kg CO_2/kWh)	Price (p/kWh)
Coal	0.912	2
Peat	1.607	6
Gas		
Simple cycle	0.489	2.51
CCGT	0.346	2
CHP	0.238	2.51
Oil	0.782	3
Wind	0	>4

Source: ERM (1998)

Thus, it can be assumed that if wind energy were to replace peat fired electricity generation, each MWh of electricity produced would save 1607 kg of CO_2 emissions; likewise, each MWh would save 912 kg CO_2 if it replaced coal fired generation and 782 kg CO_2 if it replaced oil fired generation.

In addition to reduced greenhouse gas emissions there are several additional benefits to wind energy, these include reduced emissions of SO_2, NO_x (both contributors to acid rain) and particulates, which many believe pose the greatest threat to health (KHSK 1999). Several proponents of the wind energy industry argue that the price of fossil fuel electricity generation (see **Table 3.1** above) fails to take into account the environmental cost (e.g. damage to human health, buildings and crops) of these sources of electricity and this imbalance should be redressed by the introduction of carbon taxes or similar fiscal measures.

Some emissions are caused during the production of machinery and construction work on wind farms. However, studies (Grum-Schwensen, E. 1990) conclusively show that the total emissions incurred in the construction of a turbine are equal to about the same amount of emissions saved in 3 – 4 months of operation. The average "payback" in Danish wind turbine production is 3.3 months. This compares with up to 7 years for some other renewable technologies and a period longer than their projected productive life for many nuclear plants.

From an Irish point of view it is estimated (REIO 26/2000) that a 5MW wind farm would

- Supply electricity for more than 3,000 homes every year.
- Prevent the emission of 12,000 tonnes of CO_2.
- Generate 15 million units of electricity each year.
- Cost around IR £4 million to install and generate about £450,000 of electricity each year.

3.2 Negative Local Impacts

There are several, well documented, negative local impacts to a wind farm. These can be considered to fall into two categories.

(a) Amenity Impacts: These generally effect human perception or behaviour and include visual and landscape issues, shadow flicker, noise, electromagnetic interference and recreational activities.

(b) Ecology Impacts: These have a direct or indirect material effect upon flora and fauna in the locality of the wind farm and concerns include land use and habitat loss, avian impacts, ecological damage and changes to local hydrology.

Although none of the amenity impacts outlasts the operational life of the development, they are generally at least as significant as effects on ecology in shaping public opinion and determining whether or not a proposed development will receive planning permission. At the planning stage, these impacts can become possible environmental constraints to wind farm development.

It is interesting to note that, generally, as wind farms are sited closer to human habitation the amenity effects become more prominent in planning objections and as they are located further away the ecological impacts are the prime cause for objections.

Each of these impacts are briefly discussed below

3.2.1 Visual and Landscape Issues

Wind farms must be exposed to be commercially viable and thus are highly visible features of the local landscape. The visual reaction to a wind farm is very subjective; some people view them as graceful and a welcome symbol of clean energy whereas others find them most unwelcome and intrusive additions to the landscape.

The adverse visual impacts are as follows:

- The location of wind farms, typically on the skyline of highly visible elevated sites which may also be sensitive due to their perceived character as natural wilderness with a sense of remoteness, beauty and freedom.
- Wind farms comprise of vertical elements unlike any natural occurring landform which is in stark contrast to their setting, especially where open moorland is concerned.
- Turbines stand far higher than vegetation and almost any other structure.
- The entire wind farm complex comprising of turbines, roads, service buildings as well as connection to the national grid may effectively result in a relatively large-scale development in an undeveloped area.
- Blade movement may draw attention from considerable distance, increasing visual obtrusiveness. Where blades break the skyline or appear to "counter rotate" (depending on the angle of view) they are particularly visually irritating.
- At certain times of the year, wind turbines can produce a "shadow flicker" effect as sunlight passes through the rotating blades, this can be annoying to residents in the vicinity of the turbines.

Understanding of the broader environmental benefits of wind energy tends to improve the public reaction to a wind farm. The industry has devoted considerable effort to careful integration into the landscape. Computer generated photomontages, animations and even fly-throughs, together with mapped zones of visual influence (ZVI), provide objective predictions of appearance. A 1.5 MW turbine looks little different from a 500MW one, so the continuing trend towards larger turbines may, paradoxically, reduce the subjective visual effect of a given installed capacity.

Careful siting can reduce the visual impact of a wind farm as can the layout of turbines within the site. In her book on landscape and visual issues, Stanton (1996)

offers guidelines for different approaches to turbine placement depending on the landscape in which they are to be placed. Generally, the arrangement of the turbines within the site should try to complement the existing landscape character as much as possible. A good example of this can be seen in the picture of the wind farm at Kappel in Denmark below.

3.2.2 Noise

Modern wind turbines are quiet and becoming even quieter. However noise from wind turbines is one of the most commonly perceived impacts of wind farms. Since their operation is dependent on the natural occurrence of wind, wind turbines begin to generate electric power when the wind speed exceeds a certain value- the "cut-in" speed. Clearly this can occur at any time of the day or night and thus wind farms are unusual in the intermittent nature of their operation.

The noise is produced aerodynamically from the blades, and mechanically from the gearbox and hydraulic pumps in the nacelle. Although the noise levels are not high in absolute terms, the random nature of their occurrence can be a cause of complaint. This is exacerbated by the fact that background noise levels during the night can be relatively low, as wind farms are usually planned for rural areas where this problem is even greater.

In addition, wind turbines are unusual because the noise generated is from sources well above local ground level, typically 30 – 50 metres. This leads to unusual behaviour in terms of the propagation of noise compared with the more common cases of industrial noise sources that are often close to the ground.

When planning a wind turbine development, careful consideration is given to any sound that might be heard outside nearby houses. Inside, the level is likely to be much lower, even with the windows open. The potential sound effect is usually assessed by predicting the noise that will be produced when the wind is blowing from the turbines towards nearby houses. The wind turbine noise increases slightly with wind speed, however, the sound of the wind in nearby trees and hedgerows, around buildings and over local topography also increases with wind speed, but usually at a faster rate and thus it often masks the sound of the turbine.

This makes it extremely difficult to measure sound from wind turbines accurately. At wind speeds around 8 m/s and above, it generally becomes difficult to isolate the noise component due to the turbine (www.windpower.dk). However, noise can be a significant nuisance when a dwelling is located in a hollow or valley on the leeward side of the turbines. In this situation, the masking effect of the background noise might not be sufficient to hide the broadband and tonal components of turbine noise.

The Irish Planning Institute guidelines (IPI 1995) recommend that the following noise limits be implemented:

- *40 dB(A) L_{Aeq} at a wind speed of 5m/s at hub height of nearest machine.*
- *45 dB(A) L_{Aeq} at a wind speed of 8m/s at hub height of nearest machine*
- *Wind noise should contain no distinguishable tonal or impulsive character..*

3.2.3 Electromagnetic Interference

The site of any wind farm is likely to be surrounded by a number of relay stations for various telecommunications systems (television, radio, mobile phone, etc.). These receive signals from the main transmitter and retransmit them on new channels to communities living in valleys, where the mountainous terrain blocks direct reception from the main transmitter. Wind turbines can cause electromagnetic interference by reflection of these signals from the rotor blades so that a nearby receiver picks up both a direct and reflected signal. The effect is most apparent on UHF television reception where it can cause a "ghost" image on the viewer's TV screen.

Mitigation of the effect can be achieved through turbine placement, use of non – metal turbine blades or by use of more directional transmitters or receivers. This equipment is relatively inexpensive when compared to the overall cost of the development and usually wouldn't impose too great a cost as to make the venture non-viable. Wind turbines and telecommunication systems co-exist happily in many developments through the world.

3.2.4 Recreational Amenity

Often the isolated, upland sites where wind turbines are located are used by various groups of people for recreational uses, e.g. hill walking, mountaineering, nature walks etc. The sight of the wind farm on what was previously perceived as an untouched wilderness can upset some people. The Mountaineering Council of Ireland (MCI) has objected to three wind farms to date on the grounds that the turbines dominate the landscape and remove the sense of wilderness from the region in which they are situated.

3.2.5 Land Use and Habitat Loss

The land used for the siting of wind farms may lead to the loss of natural habitats or agricultural land. Its importance depends on the agricultural, forestry or natural value of the land.

- On intensively farmed land, the impacts will be on agricultural production but these may be assumed to be internalised through agreements between the landowner and developer.
- In areas that are less intensively farmed, or without farming at all, there may be impacts on unmanaged ecosystems. The long-term loss of the land (from turbines, ancillary buildings and access tracks) and the temporary construction activities could effect terrestrial ecosystems. It is these construction activities which have the greatest potential impact on these ecosystems. However, these are generally small and reversible, with rapid re-colonisation of the disrupted from the surrounding system after work has finished.
- In the case of very fragile ecosystems, however, even minimal disruption of limited construction can induce major changes or eventually destroy the ecosystem. This is particularly important in Ireland's case, where a large proportion of the uplands areas are covered with blanket bogs that support these fragile ecosystems.
- The construction of roads and the effects of increasing access to secluded areas can have a negative impact on sensitive areas. One example would be the increased "sausage cutting " of turf near the access roads to Kilronan wind farm in Co. Roscommon.

Although, wind farms do occupy a greater area than conventional power stations, the land-use associated with conventional fossil fuel electricity generation is often underestimated, as the fossil fuel cycle is not limited to the power generation phase alone. For example, for the coal fuel cycle there is also land use at the coal mine, at limestone quarrying areas, in areas of coal storage, slag heaps and waste ash disposal sites as well as potential for land contamination. Finally, an important additional factor is that most of the land used for wind farms can be easily restored to its former state.

3.2.6 Avian Impacts

There have been several studies carried out to determine the effects wind turbines have had on bird life. The impacts upon birds can be divided into three (Gill *et al* 1996) often mutually dependent classes of:

- *Deterioration of bird habitats.*
- *Effects of disturbance*
- *Collisions*

Habitat deterioration: Apart from direct habit loss, which is generally minor or of restricted scale, some species may experience an indirect loss or deterioration of their habitat, mainly due to alterations in other factors, especially hydrology. The significance of the impact will vary markedly between sites, depending largely on habitat type and the species of bird present. Impacts on sensitive breeding species associated with wetland habitats (e.g. Red Grouse and Golden Plover) are of most concern. At coastal sites the species of concern would be terns and wintering birds such as Greenland white fronted geese.

Disturbance: Disturbance to birds may arise during the construction and operational phase. During construction, the various building activities will involve noise and visual impacts. These may lead to decreased usage of the site by some breeding and foraging birds (e.g. peregrine falcon, hen harrier and merlin) at least for the duration of the construction period. In addition, the building activities and the movement of heavy vehicles may cause some disturbance to birds in areas adjacent to the site. During the operational phase, birds may be deterred from using areas of the site due to the presence of the turbines. Disturbance may affect breeding birds (Pedersen and Poulsen 1991), feeding birds, resting birds and migrating birds (Winkelman 1992).

Collision: During the operation of a wind farm there is the potential for injury or mortality of birds if they collide with turbine blades or associated structures. The risks of birds colliding with turbines are related to a range of factors, but primarily depend on the

location and physical characteristics of the site, the species involved and the prevalent weather conditions.

Much publicity (Briggs 1996) has been given to the death of birds of prey at wind farms in Altamont, California and Tarifa in southwest Spain through collision with turbines, transmission lines and by electrocution. However, the American wind farms are not typical of developments in northwest Europe as they are large (> 7000 turbines at Altamont), most turbines are of the open lattice type. This style of tower attracts birds as they make suitable perches, which in turn attracts raptors due to the plentiful supply of prey. The wind farms at Tarifa (mostly of the lattice design) are situated at a major avian migration point.

There have been several studies carried out in Europe on bird collisions with turbines (Winkelman 1992, Meek *et al* 1993, Lowther 1996, Musters *et al* 1996) and they generally conclude that bird fatalities resulting from collisions with wind turbines are far less than those resulting from collisions with high tension power lines or with road traffic.

Birdwatch Ireland (BWI) recently objected to a proposed wind farm in Carnesore Point, Wexford due to possible impacts with Roseate and Sandwich terns which were breeding nearby, however the objection was withdrawn after monitoring showed the wind farm was unlikely to have an adverse impact.

Overall the risk of collision between turbine blades and birds is minimal both for migrating and local species. However in ecologically sensitive areas or Special Protection Areas, developments should be carefully examined. A proper EIA can easily identify these and, where ecological assessments conclude there is a significant risk, wind farms should not be developed.

3.2.7 Hydrology Impacts

As Ireland contains approximately 10% of the world's priority peatland habitat, the issue of hydrology impacts is particularly important in this country. The mild oceanic peatland found in Ireland supports several rare and endangered species of flora and fauna and is listed as a priority habitat under the Habitats Directive. Although the "footprint" (i.e. the actual occupied area) of a wind farm is usually only 1-2 % of the total site, the impacts of a development in a sensitive area can be quite damaging and usually irreversible.

Access roads: The road system used to construct and service the development has the greatest potential for damage as usually the peat is stripped to the subsoil and the road laid on top. These roads then act as drainage conduits and the water, which is essential to the survival of the habitat, is drained away. Once a peatland area has dried out it is almost impossible to rehydrate and the fragile ecosystem it supported is lost.

Cabling: The underground trenches which hold the cables and connect the turbines with the transformer housing can drain an area of the bog in a similar way to roads. In a recent study carried out over a three-year period on Barnesmore wind farm in Co. Donegal (Collins *et al.* 2000) this cabling caused considerable drainage in localised areas and contributed to significant erosion of these areas.

Compaction: Once peat has been compacted (e.g. by heavy vehicle movements) it loses its structure and can no longer support the vegetation that holds together the topsoil. Once this is lost, due to the friable nature of peat, the area is subject to erosion, which can lead to trenches, drainage and eventual drying out of the bog.

Slippage: This often occurs naturally, but can also be caused by heavy machinery or storing peat spoils removed during construction in areas of deep peat. This is particularly true in regions of steep slopes. The structure of the underlying peat becomes unstable and it slips down slope covering and destroying large areas of peatland.

Foundations: The large concrete foundations necessary to support the turbine towers can act as a sump if located in a region of deep peat. This can dry out the bog around the base of the tower and eventually lead to erosion.

The Irish Peatland Conservation Council has (to date) objected to six wind farm planning applications on the grounds that they would damage and in certain cases destroy areas of conservation worthy peatlands. Ireland is obligated under the RAMSAR (1971) convention to protect and conserve wetland regions. Also due to the rare and endangered species that inhabit these peatlands many are also worthy of Special Area of Conservation status. However, no comprehensive upland survey has been conducted yet to identify these sites.

In the report referred to earlier (Collins *et al.* 2000), it is recommended that future windfarm developments in blanket peat-covered areas should be adequately acquainted with the botanical and hydrological composition of the peat. This would require the services of soil drainage and ecology experts and developers should be discriminatory in the way excavated spoil is disposed. They should ensure that conservative and restorative techniques, involving careful retention of the seed layer of peat be planned, especially in relation to aesthetically sensitive areas. Sheep grazing should be banned for at least 3 years subsequent to completion of works and only in limited numbers for a further 3 years.

Chapter 4

The Stakeholders in the Wind Energy Industry

There are several stages a wind farm has to go through in order to develop from the drawing board to generating electricity. At some stages in the project development, various parties who have a direct or indirect interest in the project will make their views and positions felt. These stakeholders range from government departments who direct national policy, to the individuals who will live in the vicinity of the turbines. It is at the planning stage that most of the differing views and positions of these groups are considered before the projects are decided. These stakeholders include:

- Policy Makers
- Local Authorities & Planners
- Developers
- The Electricity Sector
- Duchas
- Non Governmental Organisations
    - Irish Peatland Conservation Council
    - An Taisce
    - Birdwatch Ireland
    - Mountaineering Council of Ireland
- Local Communities

As outlined in the **Methodology**, these views and positions were determined from several different sources – literature reviews of legislation, seminars and various Governmental publications, surveys of developers, NGOs and local authorities and numerous telephone conversations.

4.1 The Department of Public Enterprise (DPE)

. The Department of Public Enterprise (DPE) is responsible for many sectors including:

- Inland Transport
- Aviation
- Energy
- Communications

This section examines the role played by the DPE in the development of wind energy in Ireland to date. This role can be defined by:

- ***Energy Policy***
- ***Market Mechanisms to Support Renewable Energy Development***
- ***Deregulation***

At present the EU is implementing a common market for electricity within Member States and has issued several Directives to achieve this harmonisation. All policies and programmes adopted by the DPE have regard to this aim.

4.1.1 *Energy Policy*

The Department of Public Enterprise (DPE) is the government body responsible for delivering the country's national energy policy. As set out in their strategy statement (DPE 1998) the main objectives of this policy are:

- To ensure environmentally sustainable energy production and consumption.
- To develop a competitive energy supply industry.
- To ensure security and reliability of energy supply.
- To maximise energy efficiency.

These objectives of environmental compatibility, competitiveness and security of supply – are difficult to reconcile. On one hand, the strong growth in energy demand, at the same time as more stringent environmental constraints begin to take effect,

presents the single biggest challenge for Irish policy objectives in the energy area in the decade ahead. On the other hand, the need for competitiveness and security of energy supply are fundamental principles of energy policy.

To pursue the goals of the energy policy, the Department published its Green Paper on Sustainable Energy (DPE 1999) in which it committed itself to increasing the penetration of renewable energy by 500 MW by the year 2005. (The details of the Green Paper are discussed in **Section 1.4**). This is quite an ambitious target, as most of this will be achieved through wind power. However, the targets set in the EC White Paper on Renewable Energy (COM (97) 599) are far more demanding and require 12% of member states TPER to be from renewable sources by 2010. At present, approximately 2% of Irish TPER is met from renewable energy, rising to 3.75% by 2005 if the Green Paper targets are met (DELG 2000).

Renewable energy sources (RES) can contribute to the energy policy in the areas of environmental considerations, competitive prices and security of supply. Wind energy is seen as the most favourable renewable energy technology due to the large wind resource available in Ireland, the reasonably competitive price (~4p/kW) in comparison to alternative RES and the diminishing resources of other RES e.g. hydro and landfill gas.

4.1.2 *Market Mechanisms to Support Renewable Energy Development*

As yet, renewable energy technologies cannot compete with fossil fuel technologies in electricity generation due to a number of economic and technical barriers. In order to make these technologies competitive, support measures are applied. In Ireland, the two main support measures are:

- *EU Energy Demonstration Schemes (VALOREN, THERMIE and ENERGIE grants)*
- *The Alternative Energy Requirement (AER) tendering process*

EU Energy Demonstration Schemes: Under these schemes successful projects, which demonstrate innovative wind energy applications, are guaranteed access to the electricity market in Ireland. In 1992 the first wind farm in Ireland was built with aid from the VALOREN scheme. Between 1990 and 1998, 10 wind farms were awarded funding under the THERMIE programme. Four of these have built, 2 failed and the remaining 4 are at various stages of the development process. These wind farms received a 15-year index linked power purchase agreements (PPA).

The Department of Public Enterprise plays a discretionary role in these schemes by providing advice to the decision makers at European level, but has no say in choosing the successful projects. These grants will continue to be available to successful projects under the Fifth Framework ENERGIE programme, which succeeds the THERMIE program. However, the ENERGIE program will only provide grant aid to large-scale projects.

Alternative Energy Requirement (AER) Scheme. This scheme has been the main mechanism for supporting renewable energy projects in Ireland to date. It is administered by the DPE and under it; prospective renewable energy producers are invited to submit competing tenders for the sale of a predefined quota of electricity to the national grid. Bidders who pass technical and commercial evaluation and who submit the lowest prices for the sale of electricity are awarded a power purchase agreement (PPA) which guarantees sale for their output to the ESB for a fixed period (usually 15 years). The competitive nature of these schemes ensures that the cost ultimately borne by consumers is minimised.

To date, four AER competitions have been held between 1995 and 1998. The details of the fifth competition AER V have just been announced (May 2001). **Table 4.1** details the target, by installed capacity, set in each of these five AER competitions. (It should be noted that the figures in this table are targets – in some competitions contracts were offered whose total value exceeded the target value).

Table 4.1

Targets set in AER competitions

Category	AER I Target MW	AER II Target MW	AER III Target MW	AER IV Target MW	AER V Target MW	Total MW
Wind	**30**	**---**	**90**	**---**	**240**	**360**
Biomass/Waste	15	30	07	---	10	**62**
CHP	20	---	---	35		**55**
Hydro	10	---	03	---	5	**18**
Wave	---	---	05	---		**05**
Total	**75**	**30**	**105**	**35**	**255**	**500**

(Source – DPE Green Paper 1999)

AER I was conducted by the ESB (the Department of Public Enterprise has a majority shareholding in the ESB) with the aid of independent assessors from the UK, ETSU. The price was capped at 4p/kW for wind energy and 3p/kW for CHP. There were a total of 172 technical proposals submitted, of which ten wind projects won contracts worth of a total of 73MW. Of those ten winning bids, seven were completed.

AER II was primarily to encourage the development of biomass and waste as energy sources (as no such projects were successful in AER I). The competition resulted in the award of a power purchase agreement for a 30MW waste to electricity project in Dublin. This project was never completed.

AER III was similar to AER I with a few differences, all aspects of AER III were conducted by ETSU on behalf of the government. ESB involvement was confined to providing connection cost estimates, PPAs and connection agreements. Nine large-scale and eight small-scale wind projects won contracts worth a total of 137 MW. The successful bid price varied from 2.2p/kW to 3.7p/kW. The time frame for completion has

now passed and only two large-scale and three small-scale projects have been built, one small-scale project is still under construction.

AER IV was based solely on CHP projects and three contracts of 50 MW were awarded. These contracts generally weren't taken up as the Irish Energy Centre ran a competition concurrently which offered better terms to developers.

The details of the AER V competition have just been published recently (**Appendix D**). The majority of the allocated quota is for wind energy projects. This not a "fixed price" round as was expected, and for the first time, full planning permission for a proposed project is a precondition for entry in this round. This is meant to cut down the number of speculative proposals that was witnessed in the previous rounds.

It should be noted that each AER round is subject to EU approval before it can be offered and this has caused significant delays between rounds.

4.1.3 Deregulation

The Electricity Regulation Act 1999 (SI 23/99) was recently passed into law, which provides a regulatory framework for the introduction of competition in the generation and supply of electricity in Ireland. The Act provided for the establishment of the Commission of Electricity Regulation and gives it the necessary powers to licence and regulate the generation, distribution, transmission and supply of electricity.

The main focus of the act is to open up the electricity market for large electricity customers thus removing the ESB's monopoly position. In addition to large consumers of electricity, however, those who wish to buy electricity generated from renewable energy may also choose their supplier, thus opening the possibility of the direct sale of electricity from wind farms to customers. To date, two wind farms have been built to supply electricity directly to consumers. Only one company, Eirtricity, has begun trading in green electricity since the deregulation of the industry

4.2 Local Authorities and Planners

To develop a context for wind energy planning in Ireland it is necessary to compare the Irish planning system to those in other European countries where the wind energy industry has witnessed a strong and continued development. Within this context national planning guidelines and planning legislation are examined. The difficulties Planning Authorities face when dealing with applications are then briefly outlined.

4.2.1 European Planning Systems – An Overview

In Europe, there are two types of planning systems utilised by the Member States:

- *Regulatory Planning*
- *Discretionary Planning.*

The difference between the two has major implications for the wind energy development policies of the countries concerned.

Regulatory Planning

In Denmark, Germany and most European mainland countries, the system is regulatory. Regulations and a detailed zoning plan are prepared by municipalities and they define in detail the conditions and locations where development is acceptable. If an application meets these regulations then it must be approved. In the regulatory approach it is effectively the local authorities that define suitable sites for wind farm development.

Discretionary Planning

In a discretionary system like those of Ireland and the UK, applications are considered against a series of policy criteria which rarely define matters in a regulatory form (e.g. maximum mast height, rotor diameter etc.). In a discretionary system it is the developer who finds a site and then attempts to get permission from the local authority. A great deal of effort is spent by the by developers in preparing applications which usually have a full presentation of the environmental impact in an attempt to smooth the

development's passage in front of the local authorities planning committee. Planning decisions can be appealed to the independent planning board (An Bord Pleannala) if the developer or a third party are not satisfied with the initial decision.

In general, the workload on both the developer in preparing applications and the local authority in dealing with proposals is much greater under a discretionary system than under a regulatory system.

4.2.2 Planning Guidelines for Wind Farms

As wind farms are a relatively new feature on the landscape, Irish Planning Authorities initially had little or no experience in dealing with such planning applications. The first wind farm to be built in Ireland was in Bellacorrick, Co Mayo. It consisted of 21 turbines located on a disused peat bog in a flat landscape and adjacent to a peat fired generating station. This location was considered to be appropriate for the wind farm as it was of low visual amenity and had suitable grid infrastructure nearby to facilitate its connection to the electricity network. However, most proposed sites don't have such ideal settings and have proved to be contentious issues for Planning Authorities and local communities.

When the results of the AER I competition were announced offering contracts to a further ten wind farms in 1995, the Irish Planning Institute issued guidelines (IPI 1995) to assist planners and Planning Authorities in dealing with both the development control and Development Plan considerations of wind energy development. These offered advice on such issues as the nature of wind turbines and wind farms, how wind energy planning should be included in Planning Authorities development plans, development control aspects to be considered by planners and included a comprehensive checklist of information which should accompany a wind farm planning application.

The following year the Department of the Environment issued its own guidelines (DE 1996). These are similar in context to those issued by the IPI but include the proviso that Local Authorities *"are reminded of their duties... to have regard to policies and objectives of the Government or any Minister. National Policy on renewable energy resources is such a policy to which regard should be had in the exercise of planning functions."*

These guidelines give more detail to how Planning Authorities' development plans should address the issue of wind energy development and give an indication of the factors which would determine whether or not wind farm development would be suitable in a particular location. In relation to development control, the guidelines list specific impacts and various aspects of these which should be considered when coming to a decision. These impacts include land-use considerations, visual impact, noise, electromagnetic interference, ecology, archaeology, geology, heritage, construction impacts and safety aspects.

4.2.3 Legislation

At present, there is no national or regional strategy in place as regards planning for wind energy development. There is a brief mention in the scope and delivery of the proposed National Spatial Strategy (DELG 2000), which intends "*Matching requirements of extensive and intensive land use in rural areas. Such land uses may include renewable energy, forestry and intensive agriculture."*

The Planning and Development Act 2000 (SI 30/00) is more favourable towards renewable energy and marks a significant development in Irish planning policy. It obliges planning authorities to make a development plan every 6 years, and that (section 10) "*A development plan shall set out an overall strategy for the proper planning and sustainable development of the area*" this emphasis on sustainable development provides a welcoming legal context in which a wind farm planning application will be examined (Griffin 1999).

The most significant impact the Act may have on wind energy development, however, is in the integrated strategic approach to planning adopted in it. In order to place development plans into a more strategic context, the Act provides for planning guidelines at a regional level. Section 21 states that "*A regional authority may, after consultation with the planning authorities within its region, or shall at the direction of the Minister, make regional planning guidelines*". The significance of this development is in bridging the current divide between national policies on one hand and local planning policies on the other. It also brings the Irish discretionary planning system closer to the more widespread regulatory (in a EU context), or plan led system.

4.2.4 The Views of Planning Authorities

In order to facilitate debate on the important issues at stake, the Renewable Energy Information Office, the Irish Planning Institute and the Irish Wind Energy Association organised a number of conferences in the last few years. The main issues raised were:

- The Irish planning system is a discretionary rather than a "plan led" system.
- There is an apparent conflict of interests between the DPE's energy policy and DELG conservation policies.
- The planner has to decide between the negative local impact of wind farms and national commitments to greenhouse gas emissions reductions in the absence of any national strategy.

As the planning system is already under severe strain due to the unprecedented development accompanying the current economic boom, the planning process is proving to be a major constraint to wind energy development.

4.3 Developers

In Ireland wind developers can be divided into three loose categories:

- *Large-scale Developers* – Wind Farms in access of 5MW
- *Small-scale Developers* – Wind farms between 1MW and 5MW.
- *Individual Developers* – Single turbines or wind farms less than 1MW capacity.

Large-scale Developers

The Irish Wind Energy Association (IWEA) generally represents the large-scale developers; its corporate body also includes companies who have a direct interest (e.g. turbine manufacturers) or indirect interest (e.g. financial institutions) in the wind industry.

The IWEA was founded in 1993, with the aim of promoting wind energy development in Ireland. To this aim it is actively involved in lobbying the government on energy and planning issues as well as producing Best Practice Guidelines for developers. They have commissioned several reports and have submitted comments on several government papers including the Green Paper, the RESG report, the National Climate Change Strategy as well as most legislation relating to energy.

The large-scale developers and operators in Ireland at present are:

B-9 Energy	Millane Hill	5.94 MW
	Cark	15 MW
	Barnesmore	15 MW
	Beenageeha	3.96 MW
Saorgas Energy	Tursillagh	15.88 MW
Futuregen	Buncrana	4.8 MW
	Gorteen	4.8 MW
	Arigna	6.0 MW
Eirtricity	Culliagh	11.88 MW
	Slieve Rishen	3 MW

ESB Power Generation	Crockahenny	5 MW
	Carnsore	(planning permission)

It should be noted that Eirtricity and ESB are involved in selling "green" electricity to the grid as independent power brokers and each have several more wind farms in the planning process.

Small –scale Developers: These are usually individuals or small companies who have a single wind farm in the 2- 5 MW range. Wind farms that fall into this category are:

Currabwee	4.65 MW
Drumlough	4.8 MW
Inverin	2.65MW
Beale Hill	1.6 MW

Individual Developers: A co-operative, Meitheal na Gaoithe, has been established to represent the interests of farmers, rural communities or owners of smallholdings who wish to generate enough electricity to satisfy their needs and sell any excess to the grid. Their aims are to promote wind energy on a small scale where the local community benefits from the wind resource in their area. To date, they have made submissions to various governmental departments on issues such as the budget and the establishment of Eirgrid as the independent grid operator.

When surveyed, many developers expressed concern about various difficulties encountered in the development process, mainly to do with the AER scheme, the planning system and the issue of designated areas. These are discussed in depth in the following chapters.

4.4 The Electricity Sector

4.4.1 Electricity Supply Board

The Electricity Supply Board (ESB) was set up by the ESB Act of 1927 as a semi-state body to control and develop Ireland's electricity network. The 300 different suppliers of electricity at the time were amalgamated in to the ESB, making it the sole electricity utility in the Republic of Ireland. Until recently, the ESB had a monopoly in the generation and supply of electricity. However, under the EU Directive concerning common rules for the internal market in electricity (96/92/EC) the electricity market has been deregulated and opened to competition from independent suppliers. This Directive was transposed into Irish law under the Electricity Regulation 1999 (SI 23/99) and came into effect in February 2000.

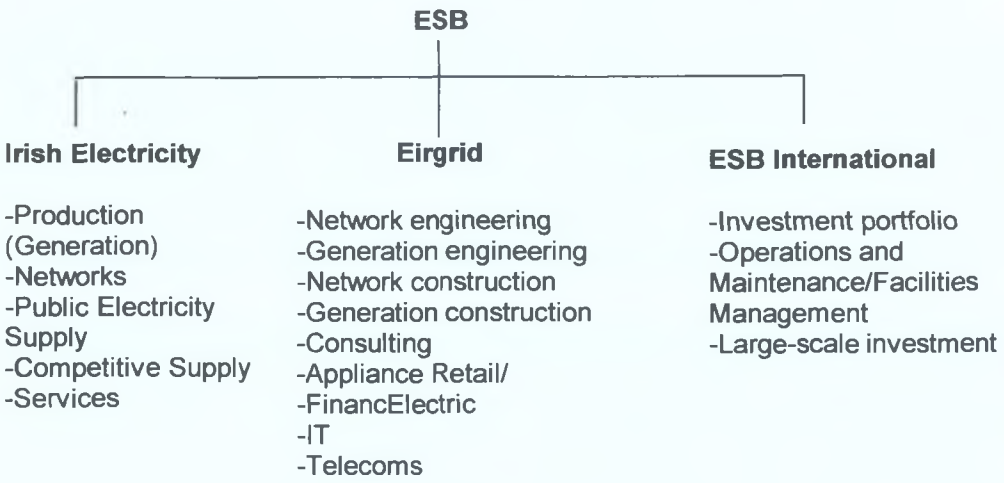
In preparation for market deregulation, the structure of the company was changed from a vertically integrated utility to one with five separate business units and a corporate centre in 1994. The company has since undergone further restructure and now consists of three independent business units: *Irish Electricity, Eirgrid* and *ESB International*. **Figure 4.1** outlines this new structure.

Each business unit operates independently of each other and under terms of the Act must operate in a fashion that is transparent doesn't stifle competition from independent operators. The Commission of Electricity Regulation, which was also created under the Act, ensures this is enforced.

Irish Electricity: has the function of building and developing a commercially oriented power production business to meet formal power supply contract obligations on a competitive basis with other independent power producers. This unit is responsible for developing wind farms to supply the company with green electricity. To date, there is one operational wind farm in Crockahenny, Co. Donegal (5 MW) and another is planned for Carnsore, Co. Wexford. Irish Electricity also provides the electricity marketing, distribution and supply service to ESB customers.

Figure 4.1

ESB Corporate Structure



Eirgrid is responsible for providing a power transmission system that is open to all generators who are licensed by the CER to produce electricity. Eirgrid provides the estimates for grid connection and applies "use of system" charges to independent generators.

ESB International is charged with developing commercially profitable business opportunities at home and abroad based on ESB's core skills.

ESB Independent Energy is a separate independent entity, responsible for buying and selling electricity generated from independent producers in competition with other independent power suppliers.

At present, the actual electricity grid itself has become a deployment constraint to wind farm development (RESG 2000). This is due to nature of the electricity network in Ireland as described below:

Transmission System: Eirgrid is responsible for the operation and maintenance of the transmission network. This transports electricity from all grid connected generation

stations to the load centres where customers require the power. The amount of power needed by industrial, commercial, and domestic customers varies depending on the time of day and year and other factors such as weather, holidays, etc. Thus, the transmission system must be flexible and able to cope with credible combinations of generation and load. It also must be designed to achieve and maintain a high level of reliability and be robust enough to withstand unforeseen events such as a transmission line being unavailable (due to fault, lightning or other outages) or a generator suddenly becoming unavailable.

Distribution System: The distribution network is the responsibility of Irish Electricity; this takes power from the high-voltage transmission system and distributes it over an extensive network of overhead and underground lines to end-users. Ireland's rural distribution network is characterised by long lines feeding a dispersed load. These rural networks are relatively weak i.e. short circuit levels are low. ESB has more network per customer than most other European Utilities and this low load density combined with long line lengths and low short circuit levels limits the amount of generation that can be embedded onto the current distribution system.

To date, most wind farms in Ireland have been connected to the distribution network. Any connection to the network, be it an additional load or additional generation, must be tested against a specified criteria to ensure any negative impact on the system integrity is minimised or offset. Given that the windiest locations are generally located along the western seaboard, where the networks are generally weakest, it is understandable that the grid itself has become a deployment constraint to wind farm development in Ireland.

In a number of areas around the country, there is a limited amount of available capacity on the network for accommodating wind energy locally via a connection to the distribution network. In Donegal, for example, only 10 – 12 MW can be accommodated currently and in Connemara, approximately 8 MW can be connected locally. When

viewed in the context of the 500 MW target set in the Green Paper and the EU White Paper of 12 % total energy requirement, it can be seen that further investment in network upgrades is essential if these targets are to be delivered.

4.4.2 Commission for Electricity Regulation

The Electricity Regulation Act 1999 provides the regulatory framework for the introduction of competition in the generation and supply of electricity in Ireland. The Act also made provision for the establishment of the Commission for Electricity Regulation (CER) and gives it the necessary powers to licence and regulate the generation, distribution transmission and supply of electricity. The duties and powers of the CER are specified in the Act and the CER is obliged to exercise them in a manner that:

- Does not discriminate unfairly between the players in the market
- Protects the interests of the final customers.

In carrying out these duties the CER is also required to have regard to the need to:

- Promote competition in the generation and supply of electricity
- Ensure that all reasonable demands by final customers for electricity are satisfied.
- Ensure that license holders are capable of financing the undertakings of their licensed activities
- Promote safety and efficiency on the part of electricity undertakings.
- Promote the continuity, security and quality of supplies of electricity.

Without prejudice to the above the CER also has a duty to:

- Take account of the protection of the environment.
- Encourage research and development into renewable, sustainable and alternative forms of energy and CHP.

Green electricity generators are required to apply to the CER for an authorisation to construct a generating station under Section 16, and licence to generate electricity under Section 14(a) of the Act.

Losses occur in the transmission system as electricity is transported from generators to the transmission/distribution interface, these losses are site specific as they depend on the location of the generator relative to the network. The CER is responsible for calculating this Transmission Loss Adjustment Factor (TLAF) which determines how these losses are allocated to the generator. The TLAF can be greater or less than one depending on the strength of the network where the generator is located. This is an important factor to be considered by developers when choosing potential location for a wind farm.

4.4.3 Eirtricity

Since the Electricity Regulation Act 1999 and deregulation of the electricity market in February 2000, electricity consumers can now choose who generates the electricity they use. This effectively removes the monopoly position held by the ESB since 1927. The transmission and distribution services are still operated by Eirgrid and Irish Electricity respectively (both independent business units of the ESB).

At present there is only one independent company, Eirtricity, supplying green energy to small and medium sized enterprises. Eirtricity owns and operates two wind farms; Cuillagh (11.88 MW) in Co. Donegal and Slieve Rushen (3 MW) in Co. Cavan, and has contracts with several independent generators to buy their supplies of wind energy for resale. Due to demand they currently have to buy green electricity from the UK via the Northern interconnector, but have applied for planning permission for several new wind farms, some of which are quite large. Eirtricity are also studying the feasibility of offshore wind energy on the Kish Bank in the Irish Sea. At present they offer electricity at up to 10% cheaper than the ESB and are intending to introduce a scheme in 2002 to supply domestic customers with green electricity.

As Eirtricity is selling the electricity it produces directly to customers it doesn't need to bid for power purchase agreements with the ESB. However it does need a

market in order to trade properly and to this end needs to create and promote this market.

As the AER tendering scheme is the main support mechanism adopted by the Irish government to stimulate the development of wind energy here, Eirtricity argue that this scheme doesn't create a "consumer led" market and fails to offer a mechanism for linking the development of wind energy to customers requirements. *"The current strategy of developers producing energy for a single customer "the State" will not lead to the full potential of wind energy being realised"* (pers. comm.).

4.5 Duchas

The Department of Arts, Heritage, Gaeltacht and the Islands has as its mission statement *"to enrich our quality of life and sense of identity, and to preserve our inheritance for present and future generations by actively fostering and promoting our culture and heritage"*.

Duchas - the Heritage Service is responsible for the management of all heritage properties in State care and for the implementation generally of legislation and policy in relation to the built and natural heritage of the State. The National Parks and Wildlife (NPW) is one of five sections of Duchas and are responsible for the protection and conservation of wild flora and fauna and the conservation of the habitats in which they occur.

It is the principle function of the NPW to administer and enforce the Wildlife Act 1987, as well as the Whale Fisheries Act 1937. This section is also responsible for implementing all EU regulations and directives relating to wildlife conservation transposed under the European Communities Act 1972. This entails identifying areas suitable for designation as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and proposed Natural Heritage Areas (pNHAs) and preparing management plans to ensure their protection.

Local Authorities are obliged to refer planning applications under the Local Government (Planning and Development) Regulation 1999 (SI 92/99) to Duchas if it feels that a proposed development could have an adverse impact on heritage or the environment. The criteria used by the NPW when considering development proposals in areas of scientific value are set down in the Freedom of Information – Section 16 Reference Book. This document states: *"This Service advises all planning authorities on the implications of the planning proposals for areas of conservation value. We will provide such expertise as is required by them on issues relating to conservation in order to implement planning law"*. It further states on planning applications: *"If it is considered that a proposed development would have a significant impact on the integrity of a site which is of conservation value, the Department would object to the granting of planning permission"*. Duchas receive over 8,000 such planning files for consideration every year.

4.6 Non Governmental Organisations (NGOs)

In Ireland there are a number of voluntary organisations that are concerned with environmental and other issues. Many of these are involved in campaigns to raise public awareness or lobby the government on these concerns. All of these NGOs were contacted and sent a survey (Appendix A), however, not all had objected or commented on wind farm applications. A brief summary of those who had been involved in wind farm planning applications is given below.

4.6.1 Irish Peatland Conservation Council (IPCC)

The Irish Peatland Conservation Council is a national charity and is entirely supported by voluntary contributions. Conservation projects include: purchasing bogland nature reserves, providing resources, and training for teachers and education groups, repairing damaged bogs and encouraging lifestyles in harmony with the environment. The IPCC was founded in 1982 and has 1,500 members and over 3000 supporters.

To date the IPCC has objected to seven wind farm planning applications on the grounds that the developments will damage and in certain cases destroy areas of conservation worthy peatlands. They have also, in conjunction with other NGOs issued an information sheet entitled "*Windfarms and Upland Bogs*" **(Appendix B)** in which they express concern about issues such as:

- *Habitats Protection – "It is critical that the siting of wind farms is placed in a national context of inadequate uplands habitats protection and enforcement and that the DPE revises the current AER scheme to specifically rule out the location of wind farms in ecologically sensitive areas.*
- *Site surveying – "The NPW should be required to carry out rigorous surveys of proposed sites … in advance of planning approval and the granting of aid under the AER scheme"*
- *Environmental Impact Assessment – "It is essential that all planning authorities explicitly recognise the ecological importance of potential sites in conjunction with the visual amenities… All wind farm proposals; irrespective of size should be subject to full and proper EIA surveys. These must address visual and noise impacts, bird impacts and upland bog and mountain heath impacts".*
- *Local Communities - "As long as wind farms are associated only with large schemes there will be little appreciation of their values and benefits. Wind farm developers should be required to offer a percentage of the energy they generate to local host communities.*

4.6.2 An Taisce

An Taisce – the National Trust for Ireland, is the oldest independent wide-ranging environmental organisation in the country. It was founded in 1949 to advance the conservation and management of Ireland's natural and built heritage in ways that are sustainable. At present, it has 22 voluntary local associations and 5,000 members throughout Ireland. It is recognised nationally, and accepted internationally as the most influential voluntary and independent environmental organisation in the country.

An Taisce has objected on up to ten wind farms to date. These objections were for reasons ranging from:

- Site location: Proposed site in sensitive / protected area.
- Impact on habitat or wildlife e.g. Blanket bogs.
- Visual Impact.
- Impact of associated infrastructure not included in EIS

Under law, planning authorities are obligated to refer planning applications for possibly contentious projects to An Taisce for consideration. An Taisce considers over 2,000 planning applications per annum and even has its own planning section. This is a considerable workload especially as the organisation depends totally upon donations to fund itself.

In the present wind energy policy, dated May 1998, the organisation expresses concern on several issues including the lack of national planning with respect to the wind resource, the interests of local communities being ignored, and the industry gaining a bad reputation because of how it is being promoted. They recommend that developers avoid hilltop locations, that an EIS be submitted with each application, that visual and noise impacts be scrutinised closely and adequate ecological monitoring take place for each proposed project. *"Only by exercising the greatest care in the design, scale and location of wind farms can we ensure that wind energy may play the important role in Ireland's future that it deserves"*

This policy is presently under review and a current policy is being prepared.

4.6.3 Birdwatch Ireland

Birdwatch Ireland is the country's largest environmental non-governmental organisation. It was founded in 1968 as the Irish Wildbird Conservancy and presently has 21 branches and over 7,000 members countrywide.

To date, Birdwatch have objected to three wind farms, one in Donegal where the proposed site was a Golden Plover nesting site, one in Wexford where fears were expressed about collisions between breeding terns and the turbines (this was later withdrawn) and one in Sligo where a wind farm is proposed in an Special Area of Conservation which has rare/ scarce breeding birds. The organisation has also made submissions to several planning applications to ensure endangered species are afforded adequate protection.

In the latest Wings magazine (No. 21 Summer 2001), Birdwatch Ireland set out their position in relation to wind farms in a policy statement which recognises the beneficial impacts of wind energy but expresses concern about habitat loss, disturbance and collisions. *"There should be a presumption against siting wind farms in, or adjacent to, Important Bird Areas (IBAs), Special Protection Areas (SPAs), other formally designated sites and other sensitive bird sites. All wind farms should be subject to environmental assessments prior to approval. There is an urgent need for studies on the potential impacts of wind farms on birds. Monitoring programmes at existing and proposed wind farms are required to address this".*

4.6.4 Mountaineering Council of Ireland

While not necessarily an NGO, the Mountaineering Council of Ireland has a specific interest in the location of wind farms and for this reason is included in this section. The MCI was founded in the 1960s (formally known as FMCI) and represents the interests of mountaineers, hill walkers and other upland recreational users. There are approximately 100 clubs in the country with around 7000 members.

To date the MCI have objected to three planning applications for wind farms on the grounds that turbines dominate landscape and remove the sense of wilderness from the regions they occupy. In a letter to the Irish Times **(Appendix C)** the MCI state *"... where a scheme is proposed on a high central ridge forming part of a major mountain grouping it would not in our view be acceptable. In association with our locally based*

affiliate Clubs, our Council's policy is to oppose through the planning process the use of upland sites for inappropriate developments, be they hydro, wind power or agricultural intensification."

4.7 Local Communities

The views and positions of local communities are difficult to establish due to number of people who now live in the vicinity of wind farms. It is the local community who are perhaps most affected by the presence of a wind farm near their houses.

Several opinion polls have been conducted in the UK and abroad to determine local community reaction to wind farms. To date only one survey of the Irish public's attitudes to wind energy has been conducted, however it was about wind energy in general and not specifically about wind farms. It is likely that the British surveys would most likely reflect the attitudes of the local communities in Ireland due to the similarities in climate, topography and types of wind farm present.

In a report (Simon 1996), summarising attitudes to wind power, it was revealed that between 1990 and 1996 research groups carried out thirteen different studies into public attitudes to wind power. In total, these surveys canvassed the opinions of 3,549 people who had an informed, first hand view of wind farms by virtue of living close to an actual, or proposed site.

"*Every single study shows that the overwhelming majority of residents in areas with a wind project, are pro wind power, both in theory as a renewable energy source and in practice in their area, with an average of 8 out of 10 supporting their local wind farm*"

In fact, respondents who lived near a wind farm and had direct experience of the wind farm operating were more positive than those who did not have a wind farm near them. In studies (Young 1994) where opinions were canvassed at the time of

construction and then some months afterwards, respondents were more positive at the second stage than the first.

However, several issues invariably crop up as objections to developments, the most frequent are the perceived visual and noise impacts. Also, the local economic impacts of a wind farm have also prompted objections to proposals for developments. This may stem from the view that the resource is local, so the community should benefit economically from harnessing it or that the local impact is negative and the community should be compensated (Collins, *et al* 1999). There is also a perception that a wind farm may have a negative local economic impact through its impact on tourism and on property values.

Chapter 5

Market Mechanisms – Difficulties with the AER Scheme

As discussed in the previous chapter, there are three methods for "green" electricity generators of to bring their product to the national grid. These are:

- The Alternative Energy Requirement (AER) tendering process
- Direct Sale to Consumers (Third Party Access)
- EU Energy Demonstration Schemes (VALOREN, THERMIE and ENERGIE grants)

The AER system is at present the main mechanism for promoting wind energy in Ireland and the cause of most debate within the industry. This system is discussed in detail below. Direct sale to final consumers has only been possible since February 2000 and is still a relatively new force in the market. The EU Energy Demonstration Schemes are primarily administered from Europe and aren't a primary driver for wind energy development.

5.1 The Alternative Energy Requirement (AER) scheme.

The Department of Public Enterprise administers the AER competition and its primary aim is to encourage the development of renewable energy sources **at the lowest price** to the end consumer. It is the main mechanism for securing a market for RES developers and is the form of support favoured by the Irish Government (Rossi 1999). In order to win a contract (or power purchase agreement) to sell "green " electricity to the grid the developer must pass technical and financial evaluation and those who submit the lowest bid prices win the contract. By this method the Department ensures the lowest cost generation as set out in their strategy statement.

However, this system of competitive bidding has caused difficulties for both developers and planners alike. From the developers point of view the problems encountered included:

- ***Overly bureaucratic and time consuming***
- ***Stop start nature of competitions.***
- ***Failure to deliver targets.***
- ***Discriminates against smaller developers.***
- ***Doesn't encourage a consumer led market.***

From the planning side difficulties encountered include:

- ***No consideration for planning permission in submission required.***
- ***"Stop-start" nature puts planning departments under pressure.***
- ***Certain areas are inundated with applications after results are announced.***
- ***Competitive bidding forces developers into most sensitive areas.***

Each of these difficulties is examined briefly in the following sections.

5.2 Developers: Difficulties with AER Process

5.2.1 *"Overly bureaucratic and time consuming"*

Normally the bidding process first involves the potential developer expressing an interest in an AER competition. There were 168 registrations for AER I and 279 for AER III (RESG 2000). Following this, the developer submits a technical evaluation; this involves:

- Estimating the energy resource.
- Technical data on the proposed generating plant.
- Judgement of consent (i.e. is the project likely to get planning permission?).
- An estimate for ESB connection.

This last requirement in itself can cause delays, as after the launch of a new competition, the ESB is suddenly inundated with requests for these connection estimates. Once the technical evaluation is passed the developer has to submit a bid

price and provide a "letter of comfort" from a financial institution to show that he/she is capable of financing the project. In total, the evaluation process takes approximately 10 – 12 months before results are announced. During this time the potential developer is unable to proceed with development, as no market exists until a PPA is secured. It is estimated that a full submission can conservatively cost £10,000-£15,000 with the majority of them failing. This represents a considerable waste of investment and time and obviously discriminates the individual and small-scale developers who have limited capital and resources.

5.2.2 *"Stop – Start" Nature of Competitions*

AER I was launched in 1994 and the results were announced in 1995, the next competition which involved wind energy projects was AER III which was launched in 1997 and the results announced the following year. The details of AER V have just been published (May 2001). *"The "stop-start" nature of the AER process has hindered the development of the wind energy industry rather than its actual aim of promoting it"* (pers. comm.).

AER V was expected to be a "fixed price" round and to be aimed at projects already in the planning process, as recommended by the Renewable Energy Strategy Group report (RESG 2000). As a result, developers are rushing project's planning applications in order to qualify for this round (pers. comm.). (As it transpires, AER V requires full planning permission for entry and is still a "bidding" type competition)

This is clearly an undesirable situation for all stakeholders in the industry, developers are unsure of what to expect and what is expected of them, planners have to contend with incomplete applications and the communities in the vicinity of these projects are unaware of applications being submitted until they are published in the local paper.

5.2.3 *Failure to Deliver Targets*

The AER I competition resulted in ten contracts being offered to deliver 73 MW of wind-generated electricity, of these, seven wind farms were completed supplying a total of 44 MW. The other three failed at the planning process. The AER III competition offered a total of 137 MW for wind energy contracts to nine large-scale and eight small-scale projects, of these, two large-scale and three small-scale wind farms were completed. One small-scale project is still under completion. The main reasons for so few projects from this round being completed are:

- In order for the bid price to be competitive many developers chose very exposed, upland sites. These areas are most sensitive to development and the projects were refused planning permission.
- Some developers engaged in "suicide bidding" where the bid price was so low that, although they secured the contract, the project wasn't financially viable and was abandoned.

5.2.4 *Discriminates against Small Developers*

Of the seven wind farms completed under the AER I scheme, most are owned and operated by companies who have already been successful in competing in similar NFFO (Non Fossil Fuel Obligation) competitions in the British Isles. They have considerable resources and can afford to submit several applications for each AER round. By this technique, large-scale producers can put themselves in a better position to win contracts than the small independent developer who has limited resources and finds even the price of a submitting a bid expensive. The proof of this can be seen in the UK where most of the contracts awarded to wind farms under the NFFO competitions are owned by large companies who have access to significant balance sheets.

5.3 Planning Authorities: Difficulties with the AER process

5.3.1 *No Consideration for Planning Permission Required in Submission.*

When submitting a bid to win a PPA under the AER scheme, there is no planning submission required. As seen earlier (**Section 5.2.3)** this has resulted in projects being awarded contracts to supply electricity, but unable to secure planning permission due to the location of the proposed wind farm. A situation has now arisen where wind farms with a combined installed capacity of over 155 MW, have received full planning permission but do not have PPAs (RESG 2000). It is recommended in the Strategy report that future AER rounds only apply to projects already in the planning process be considered, however this has led to a rash of incomplete planning applications being submitted in order to qualify for the next round. As seen the AER V competition requires full planning permission as a precondition to entry.

5.3.2 *"Stop-Start" nature of process puts pressure on planning departments.*

The first two rounds of AER competitions involving wind generation resulted in a deluge of planning applications for wind farms in regions of a relatively high wind resource. This has put planning departments under considerable pressure; especially considering wind turbines are a comparatively new feature to the Irish landscape. Not only do planners have to consider the impacts of each wind farm on a case-by-case basis, they also have to consider the cumulative impacts of several wind farms in a relatively small area. The cyclical nature of the AER scheme has resulted in planning departments witnessing relatively quiet periods followed by periods of intense activity as deadlines for completion approach. This situation clearly favours neither the planners nor the developers.

5.3.3 *Certain areas are inundated with applications after results*

Following the results of the AER I competition, Co. Donegal received numerous planning applications for wind farms as the majority of winning bids were in this region. Likewise, the local authority in Co Cork became the focus for planning applications

following the AER III results, as Cork is ranked as the county with the highest wind resource in the country. Thus, there is no spatial aspect to the tendering process. Obviously this puts further strain on the planning authorities, especially in the windiest regions of the country.

Areas that have a suitable infrastructure to support the development of wind energy but a lower wind resource than the uplands will never win an AER contract in its current form. One example would be the Midlands, where large tracts of land (owned by Bord Na Mona) have been stripped to supply peat and are unsuitable for forestry or other development. There already exists an extensive rail and electricity network, the local authorities want to develop the area, as the supply of peat is diminishing and employment opportunities will fall as this continues. Therefore, the region would be ideally suited for intensive wind farm development, however it will not happen without government support, and the AER process in its present form won't encourage this type of development (REIO 1999).

5.3.4 *Competitive bidding forces developers into most sensitive areas.*

As discussed earlier, the bid price offered by developers (who have passed the technical and financial evaluation) is the main basis for deciding which applicants win contracts. Therefore, in order to win a PPA the developer is obliged to seek the most exposed, windiest locations, which are usually upland areas. (Wind energy is proportional to the cube of the wind speed – i.e. twice as much wind yields eight times as much energy.(http://www.windpower.dk/). Thus, in order to be competitive in the tendering process, the turbines have to be sited at the highest altitudes, as wind speed usually increases significantly with height).

However, these areas are usually sensitive to development, especially in a visual context, and planners are faced with weighing the positive global impacts of the development against the negative local impacts.

Chapter 6

Conflicts Within The Planning Process

At present, the planning process is one of the major constraints to wind farm development. Even if a project has power purchase agreements and adequate financial resources, without planning permission, it will not be developed. It is at the planning stage that the often-conflicting views and positions of the various stakeholders are considered before a decision is reached. During this study several planning issues became apparent which directly or indirectly constrain the development of the wind energy industry in Ireland. These are:

- ***The lack of a national wind energy strategy.***
- ***Anomalies in planning statistics amongst local authorities.***
- ***The Wind Farm Planning Guidelines are outdated.***
- ***The lack of uniformity in Development Plans.***
- ***Grid connection difficulties.***

These issues are discussed in more detail in the following sections.

6.1 *Lack of National Wind Energy Strategy.*

As discussed in **Section 4.2** previously, the planning system in Ireland is discretionary and there is, at present, no national or regional strategy in place to deal with the relatively new phenomenon of wind turbines. This lack of national guidance has resulted in local authorities dealing with wind farm applications in an ad-hoc manner and decisions are made on a case-by-case basis.

At present, the only indication of required penetration of wind energy has been the targets set through the AER process. This lack of guidance from a national level has put both developers and Planning Authorities under severe pressure. Planning officials dealing with applications for wind energy projects have expressed concern about the lack of a strategic planning policy for wind energy and the difficulty in having to make recommendations on individual proposals in the absence of such s strategic framework

(van der Kamp 1999). As a result, when faced with a proposal for a wind farm in an area of high visual amenity, the planner is faced with a number of difficult questions:

- Could the project be located elsewhere in the county with less visual impact?
- How valuable is the local high amenity landscape in a national context?
- Has the county already made a reasonable contribution to national targets?
- How are cumulative impacts considered when further planning applications are made for the same area?

As there is no national/regional strategy and the local authority Development Plans, at best, make a passing reference to suitable areas for development; the planner has to make a decision in a vacuum. As a result, some local authorities appear more in favour of wind farms than others. No matter what the outcome, most decisions made by Planning Authorities are appealed to An Bord Pleanala, either by the wind farm developer or by a third party.

The lack of a national strategy also has implications for the developer. Each application is dealt with individually, and without any spatial planning framework a planning decision is usually not arrived at within 8 months. Results from the developers survey **(Appendix A)** indicate decisions normally take between 12-18 months, and if subject to an appeal (as most are) this can delay the project for a further 8 months. As AER contracts and THERMIE grants are subject to deadlines this can put developers under pressure and has, in some cases, led to projects being abandoned. This represents a considerable waste of investment and time for the developer and has the added effect of discouraging the smaller developer from entering the market.

6.2 *Anomalies in planning statistics amongst local authorities.*

In order to determine the present planning climate for wind energy projects, a survey of local authority planning decisions was conducted. A review of wind farm planning decisions appealed to An Bord Pleanala was then conducted. These are discussed in the following paragraphs.

The first survey was conducted of all relevant local authorities to determine;

- The number of applications for wind farms received by each authority.
- The number of applications refused/ approved.
- The number of applications still being processed.
- Whether the authorities Development Plan mentioned renewable energy and wind energy in particular.

The results are shown below in **Table 6.1.**

The survey indicates that as of April 2001, a total of 131 applications were received for wind farms (generally consisting of 2 or more turbines). Of these, 58 were granted planning permission and 27 were refused permission by the local authority. A further 31 applications are awaiting decision and 15 were returned to the developer as being incomplete or requiring further information.

It is difficult to draw significant conclusions from these results, as it is more of a "snap shot" of a situation which is still evolving with more applications been received and decided upon every week. In general it can be seen that the twice as many projects are granted planning permission as are refused. This can be considered a relatively positive attitude to wind energy developments in this country.

In hindsight, it would have appropriate to also determine the number of these decisions that were appealed to An Bord Pleanala. An interesting further study would be to determine if trends existed in appeals to An Bord Pleanala, i.e. as wind farms applications increased in number would the amount of appeals increase accordingly or would public acceptance of wind turbines increase with familiarity?

Table 6.1

Planning Authority Survey Results (March 2001)

Local Authority	No. of Applications	Approved	Refused	Incomplete application	Awaiting Decision	R.E. in Development Plan?
Carlow	1	1	0	0	0	Yes
Cavan	6	3	0	3	0	Yes
Clare	13	2	6	1	4	Yes
Cork	19	5	6	0	8	Yes
Donegal	21	12	5	4	0	Yes
Dun Laoghaire	0	0	0	0	0	No
Galway	10	7	2	0	1	Yes
Kerry	6	3	1	2	0	Yes
Kildare	0	0	0	0	0	Yes
Kilkenny	0	0	0	0	0	Yes
Laois	1	0	1	0	0	Yes
Leitrim	5	4	1	0	0	Yes
Limerick	5	0	1	1	3	Yes
Longford	0	0	0	0	0	No
Louth *						
Mayo	20	9	2	1	8	No
Meath *						
Monaghan	0	0	0	0	0	Yes
Offaly *						
Roscommon	2	2	0	0	0	Draft
Sligo	5	4	0	0	1	Yes
Tipperary(NR)	4	1	0	0	3	Yes
Tipperary (SR)	4	2	0	0	2	Yes
Waterford	2	1	1	0	0	Yes
Westmeath	1	0	0	1	0	No
Wexford	3	1	1	0	1	Yes
Wicklow	3	1	0	2	0	Yes

(*) – Data not available

All appeals made to An Bord Pleanala in relation to wind farms available to public access (March 2001) were then reviewed. The results of these are shown in **Table 6.2** below.

Table 6.2

Wind Farm Planning Appeals – An Bord Pleanala Decisions

Appeal No.	Local Authority	Initial Decision	An Bord Pleanala's decision
119743	Donegal Co.Co.	G + cons.	R
119042	Cork Co.Co.	G + cons.	R
116487	Wexford Co.Co.	R	G + cons.
112591	Donegal Co.Co.	R	G + cons.
112488	Cork Co.Co.	G + cons.	G + revise cons.
112201	Cork Co.Co.	G + cons.	G + revise cons.
111211	Cork Co.Co.	G + cons.	Withdrawn
109737	Clare Co.Co.	R	R
109598	Kerry Co.Co.	G + cons	G + revise cons.
108995	Cork Co.Co.	R	R
108973	Cork Co.Co.	R	R
108950	Cork Co.Co.	G + cons.	G + revise cons.
108928	Sligo Co.Co.	G + cons	Withdrawn
106437	Galway Co.Co.	G + cons.	G + revise cons.
106292	Galway Co.Co.	G + cons	G + revise cons.
106290	Galway Co.Co.	G + cons	G + revise cons.
105339	Kerry Co.Co.	G	G + cons
102057	Clare Co.Co.	R	R

Key---- G = Granted, R = Refused, Cons. = Conditions attached

As seen, An Bord Pleanala upholds the Local Authorities decision in the majority of appealed decisions. Again, these figures only represent a sample of the total decisions appealed as several files were still under consideration or unavailable for public access.

Generally, wind farm applications are viewed in a favourable light and several Planning Authorities have yet to refuse an application. One notable exception, however, is Clare County Council whose grant/ refusal ratio is 1/ 3 as compared to the national average of 2/ 1.

Two possible reasons for this difference are:

- Co. Clare's most notable feature is the Burren, which is a world famous tourist attraction. Any wind farm development would contrast sharply with its barren, flat landscape and could be detrimental to the tourist industry.
- The largest electricity generating station in the country, the 900 MW Moneypoint coal-fired station, is located in Co. Clare and "*The thinking of the local people is that they have given enough to the ESB over the past 15 years*". (I.T. 07/04/01).

This situation is clearly undesirable, as the EU targets apply to the country as a whole. If parochial interests are seen to override national and European policy it sets an unfavourable precedent for other local authorities. It also shifts the burden of realising these targets to the other counties and regions that will have to accommodate additional wind farms to make up any shortfall.

However, a recent ruling by An Bord Pleanala (March 2001) to overrule a decision by Clare Co. Council is seen as a landmark decision in wind energy planning. In its decision to grant planning permission to a 15-turbine wind farm near the village of Connolly, the Board overruled a strong recommendation by its own Inspector to refuse planning permission as well as the provisions of the 1999 Clare County Development Plan when it overturned an initial decision to refuse planning permission by Clare Co Council.

The Board's ruling indicates strongly that in future it will have regard to the aims of the objectives of the National Development Plan over opposition from local groups. It is the first time the appeals board has overturned a decision by Clare Co Council in

relation to a wind farm proposal - on the previous four occasions, it upheld the local authority's decision to refuse planning.

6.3 *Wind Farm Development Guidelines*

As the Department of Environment guidelines (DoE 1996) are the only guidance offered to planners by the government on the proper planning for wind energy, many local authorities incorporate their general recommendations in their Development Plans. Policy statements like "*In assessing applications, the Council will have regard to "Wind Farm Development Guidelines for Planning Authorities" issued by the Dept. of the Environment*" (Kerry Co. Co.) are common. However, these guidelines are not definitive and are open to interpretation. The most controversial clause is in the visual impact section;

- Section 4.9 - *Turbines should not be prominent when seen against an elevated skyline background from public roads, towns or village centres.*

Several applications have been refused on the grounds that the proposed project contravenes this section, and this clause is quoted in almost every objection submitted to Planning Authorities and An Bord Pleanala. The reality is, that although Ireland has a low population density, there are very few sites with wind energy potential which would not be seen from public roads or population centres. This clause will continue to be a stumbling block to development as its interpretation can realistically invalidate most applications from the outset. As one planner puts it *"Reference to skylines and visual impact, in my opinion, are often irrelevant in the context of the scale of the generators. It therefore, becomes a question of a weighting between a national policy and a county level policy"* (Daly 1999)

Another part of the visual impact part of the Guidelines (Section 4.10) states *"consideration should be given to the issue of intervisibility of sites and to the cumulative impact of developments"*. This has been interpreted to preclude further development of wind farms in an area simply because of the presence of a similar feature in the area.

The IWEA has indicated that the guidelines should be updated particularly with regard to Section 4.9 and Section 4.10, as it is believed that these sections are contrary to stated environmental and planning policy (Forde 2000).

When surveyed, most developers indicated that they also felt the guidelines were outdated, as did the Strategy report for wind farm deployment (RESG 2000) which recommends that the guidelines be restructured, especially in light of technological advancements in the wind industry; this advancement being in the areas of turbine size and generating capacity, improvements in noise reduction etc.

6.4 *Lack of uniformity of Development Plans*

The Guidelines to Wind Farm Development, discussed in the previous section, require that each local authority's Development Plan should incorporate a statement of the authority's policies and objectives in relation to wind energy development and should include:

- Acceptance of the importance of wind energy as a renewable energy source when carried out in an environmentally manner.
- An indication of the factors which would determine whether or not wind farm development would be open for consideration in a particular area. These regional factors are; the wind resource, the strength of the grid, site suitability and local considerations.

Most Development Plans have taken these recommendations on board, and have a section dealing with renewable energy. However, these usually consist of general statements of the nature *"The Planning Authority will adopt a positive approach to*

renewable energy developments provided they are environmentally acceptable" and include a paragraph or two commenting on what impacts will be examined in an application.

Some of the more recent development plans show strategies being drawn up over the plan period to identify suitable areas for wind farm development. For example "*The County Council will prepare over the plan period a countywide Wind Energy Development Framework which will seek to identify how wind energy development could be accommodated in the county utilising the least sensitive locations, and will set out guidance on location, layout and design having regard to local environmental conditions"* (Wexford Co. Co. 2000).

These general statements, while valuable in their recognition of the importance of renewable energy, offer little or no practicable guidance to either the potential developer or the planner. As wind energy is expected to play a major role in the achievement of emission reduction targets, and Development Plans are the "blueprint" for a county or region, it is essential that more concrete information (i.e. suitable locations, suitable scale of development etc.), which would be specific to the region or county be given in the Plan.

In a "regulatory" type planning system like that in Denmark, Germany and the Netherlands it is effectively the local authority that defines the sites for development. The local plans define the site in detail and in the Danish system they actually define the position of the turbines. With this type of planning system, once the proposed project is approved, there is a large degree of certainty and this avoids much of the argument over planning decisions as witnessed in Ireland and the UK. The workload on the developer and the planning authority is also greatly reduced.

6.5 *Grid Connection Issues*

Under the present planning system, the developer obtains planning permission for the development of the site only (i.e. turbines, access roads and ancillary buildings). The connection to the grid is a separate planning issue and is usually submitted by the transmission operator (Eirgrid). However, a situation has arisen in certain cases that the grid operator will not give an indication of grid connection estimates until the project has already received planning permission. This is due to the considerable number of wind farms that have received these estimates but never reached completion for various reasons. On the other hand several Planning Authorities insist on grid connection details to be submitted with the application, as this is a significant impact of a potential project, especially in the context of remote, exposed upland areas where wind farms are generally sited. This puts a developer in a "Catch 22" scenario where planning permission is necessary to get a grid connection estimate and vice versa.

Chapter 7

Designated Areas

7.1 European and Irish Legislation

Since the formation of the European Union, the EC has gradually been implementing a nature conservation policy on its territory. In 1992 the Maastricht Treaty reaffirmed the obligation to incorporate environmental protection into all European Union policies. EC legislation comprises two directives: the "Birds Directive" (79/409/EEC) and the "Habitats Directive" (92/43/EEC) which are concerned with the protection of natural habitats, fauna and flora and the creation of a European Network of protected sites.

Adopted in 1979, the Birds Directive is concerned with the long-term protection and management of all bird species living in a wild state on Community territory. The Member States are responsible for protecting all these species, especially migratory birds, and protecting and preserving the habitats in which they live.

Under the Directive, each Member State must classify the most appropriate areas for conservation as Special Protection Areas (SPA). These areas enjoy protection under European law from untoward development. The Birds Directive has been enacted into Irish legislation under the European Communities (Conservation of Wild Birds) Regulations 1985 (SI 291/85), and to date 110 areas in the Irish Republic have been designated as Special Protection Areas.

The Habitats Directive, adopted in 1992, is the main EC instrument to promote and maintain biodiversity. It introduced the obligation to preserve habitats and species of Community interest. Each Member State is responsible for identifying and designating sites that are important for the protection of the species and habitats covered by the directive as "Special Areas of Conservation" (SAC). These areas will benefit from statutory or contractual measures and, where appropriate, management plans which will ensure their long-term preservation by integrating human activities into a sustainable development strategy. The Habitats Directive was enacted into Irish law

under the European Communities (Natural Habitats) Regulations 1997 (SI 94/97). These regulations require Local Authorities, in respect to developments that require planning permission, to ensure appropriate assessment of the implications of the proposal on the site is undertaken in view of the conservation objectives of the designation. This applies to all development proposals likely to impact on the site, regardless of location. To date, Ireland has submitted 362 proposed candidate sites to the Commission – these sites receive full protection of the regulations from the time when they are proposed.

Together, the Special Areas of Conservation and Special Protection Areas designated by the Member States will make up the European network of protected sites, Natura 2000. This network is the cornerstone of EC nature conservation policy and presents a major challenge to the 15 Member States to introduce effective conservation and management measures for the sites in their jurisdiction.

Other than National Parks and Nature Reserves, designations of Natural Heritage Areas (NHAs) are another method of nature conservation. These sites are can contain species of flora and fauna of national importance and their habitats or they can be important geological and geomorphological sites as well as fossil sites. These NHAs are protected in Irish legislation under The Wildlife (Amendment) Act (2000). To date over 1,100 sites have been proposed, and these enjoy statutory protection until designated. **Table 7.1** indicates the number and acreage of National Parks, Nature Reserves, and designated areas in Ireland.

Table 7.1

Protected Areas in Ireland

Category	No.of Sites	Area Covered (ha)	Protection
Nature Reserves	78	18,085	Statutory (State owned)
SPAs	110	230,000	Statutory
SACs	362	~650,000	Statutory
NHAs	1,100 +	~750,000	Statutory
National Parks	6	56,987	Non Statutory (state owned)

(Source EPA)

It should be noted that the proposed NHA designations would include many of the sites already designated as SACs or SPAs.

7.2 Views and Positions of Stakeholders on Status of Designated Areas.

The issue of designated areas and their suitability for wind farm development is a contentious issue between developers, NGOs and Planning Authorities. It is an area that needs to be examined carefully, as any infringement of European Directives can carry severe penalties. The views and positions of these stakeholders, as much as they can be ascertained, are given below.

Developers

When surveyed, nearly all developers who responded indicated that designated areas should not be precluded from wind farm development. Several actually stated that the issue of designated areas were one of the biggest planning obstacles they had to overcome in obtaining planning permission. This is because many SACs, SPAs and pNHAs are in isolated, upland regions. As they are remote, exposed and usually have a suitable wind resource, these areas are particularly suitable for wind energy development,

As the actual "footprint" of the turbines, access roads and ancillary buildings usually represents only 1 – 2% of the total site occupied by the wind farm, developers argue that with careful planning and construction these sites can be relatively unharmed by the development. In this manner both the conservation objective of the designation can be achieved as well as utilisation of a natural sustainable resource.

Non-Governmental Organisations (NGOs)

When surveyed, most NGOs stated that Planning Authorities should discourage wind farm development in designated areas and that a very through EIS should accompany any planning application for such a proposed project. This should examine the possible impacts on the protected species or habitat in great detail.

A common theme that arose in discussions with representatives of NGOs was that; although there should be a presumption against siting wind farms in designated areas, there also existed many other areas that warranted designation and were equally vulnerable. These sites are offered little or no protection and in several instances haven't even been identified yet due to lack survey data.

The arguments of the NGOs are given in an information sheet signed by the main environmental NGOs in Ireland **(Appendix B)**. In this statement they declare their support for the government renewable energy strategy and efforts to reduce Ireland's dependence on imported fossil fuels, however, "*there should be a presumption against the siting of wind farms in ecologically sensitive areas. Many of these sites are designated as SPAs, proposed NHAs and SACs. However, as there has been no recent and comprehensive survey of upland breeding birds, there are sites of potential conservation importance which have not been identified and are therefore not protected by the existing suite of statutory designations.*

Similarly, "*All upland areas scheduled for wind farm sites should be surveyed for their habitat value. Where a site is found to be of conservation importance a bogland*

survey must be undertaken by technical experts from the National Parks and Wildlife Service. This is particularly important as no upland blanket bog survey or mountain heath survey to identify NHAs and SACs has yet to be undertaken by the NPWS. This has resulted in sites of high conservation value for their habitat being damaged by inappropriate wind farm schemes in Ireland".

They also recommend that long term monitoring programmes should be implemented for a number of selected proposed wind farm sites and the data gathered should be used to determine the long term effects of wind farms on local ecologies. This would help inform planners regarding the siting of future developments.

Planning Authorities

The issue of designated areas was discussed at the "Wind Energy Planning for 2000' conference held in Galway in November 1999. (REIO 1999). It was felt that there shouldn't be an automatic assumption that wind energy would be excluded from these designated areas, as it was possible that limited but carefully designed wind farms might well be feasible. Underlying this point was the issue that excluding significant areas from any wind energy development increases the pressure on the remaining landmass, particularly in view of the overall commitment to developing a certain level of wind energy production capacity. Also was the consideration that for a local authority to prohibit development in these areas in its Development Plan could be open to legal challenge.

On the other hand, the general feeling was that although the potential impact of a wind farm development in a designated area would depend on the reason behind the designation and whether the objective of the designation would be likely to be affected by wind turbines – the very negative emotional reaction it would surely encounter would be more trouble than any developer might wish to draw upon themselves.

7.3 Protection of Designated Sites

Under Irish law, Duchas and the National Parks and Wildlife Service are responsible for identifying and protecting all designated areas. Both these bodies are under the remit of the Department of the Arts, Gaeltacht, Heritage and the Islands.

However many NGOs feel that the protection afforded to designated areas by the National Parks and Wildlife Service was inadequate and often negated the issue of protection altogether (pers. comm.). In a planning survey conducted by the Irish Wildlife Trust (Clerkin, Flynn 1999) it was shown that:

- Only 48% of planning applications within SACs are referred to the National Parks and Wildlife for comment.
- The NPW commented on 24% of planning applications within SACs.
- The NPW objected to 8% of developments within SACs.
- 80% of all applications within SACs were granted planning permission.

Similarly, in a study conducted for Birdwatch Ireland (Galvin 2000) it is shown that:

- 26% of aquaculture operations are within Special Protection Areas.
- Duchas routinely approve license applications in SPAs
- Where licenses were issued in SPAs, in no case was the operator informed that his operation was within an SPA. Typically there was no difference between licenses issued in SPAs and those in non-SPA areas.

Many NGOs feel that a breakdown of trust has occurred between environmental organisations and Duchas and *"this is a result of failure by Duchas to engage in real meaningful dialogue and consultation with environmental groups in Ireland. Environmental groups are not treated as partners in the common goal of nature conservation in this country"* **(Appendix C)**.

For the purposes of this study, a request for data on the number of wind farm planning applications reviewed by Duchas and the number of objections submitted by the same. This request was initially refused and subsequently a Freedom of Information (FOI) request was submitted. After discussions with Department officials it was agreed to withdraw the FOI request on the grounds that a reply wouldn't be available for some time due to staffing shortages. A sample of 20 planning applications for wind farms from around the country was then submitted. Of these, Duchas made several recommendations mostly to do with archaeological issues and a few on grounds of nature conservation. (Exact figures weren't given, as several files were unavailable).

Clearly, there are several concurrent topics for debate on issues relating to protection of designated areas. These include:

- There are many areas worthy of designated area status which have yet to be identified by the National Parks and Wildlife Service.
- Although they are working towards a common goal there is a split between the various NGOs and Duchas on certain issues.
- NGOs feel that the protection offered to designated areas is inadequate and many are under threat from development.
- Duchas have to operate in a political environment where other sections of the Dept. of the Arts, Heritage, Gaeltacht and the Islands have a conflicting agenda with their policies of conservation.

This last point was highlighted during the debate over the granting of planning permission to build a three-turbine wind farm on one of the Aran Islands, Inis Meain, although the site is a Special Area of Conservation and of high visual amenity. This area was described by the writer Tim Robinson as *"With its superb sequence of cliffed promontories, majestic rock terraces and impressive storm beaches of huge boulders, this is one of the world's sublime landscapes"*. Permission was granted without an objection from Duchas or even the need for even an Environmental Impact Statement.

Chapter 8

Discussion

In order for Ireland to achieve the targets set in the short term by the Department of Public Enterprise Green Paper and in the medium term by the EU White Paper, the constraints discussed in the previous chapters will have to be addressed by all stakeholders in the wind industry.

It appears that under the present system the short-term goal of 500 MW additional energy from RES by 2005 will be reached, as presently there are applications in the planning process for several large-scale (>100 MW) wind farms, both onshore and offshore, which would deliver the required energy if even only a few reach completion. However, the medium term goal of 12% TPER from RES by 2010 presents a far greater challenge and preparation is necessary now to ensure this target will be reached.

This will require a much greater degree of certainty and communication between the various stakeholders than presently exists to achieve these goals with the minimum conflict of interests. Clear signals will have to be sent from:

Government to:	*Developers*
	Planning Authorities
	General Public
Planning Authorities to:	*Developers*
	NGOs
	Local Communities
Developers to:	*Local Communities*
	NGOs

As mentioned earlier, it is necessary for the government to direct the future of the wind industry; this requires a national renewable energy strategy that will give clear

guidance to developers, planning authorities and the general public. This strategy will have to reconcile the DPE's energy policy with the DELG's conservation policies. An outline approach is presented in the following sections which would help achieve this convergence of policies. The main points discussed are:

- The planning system
- The AER scheme
- Local Community benefit
- Designated areas

In writing these recommendations the author is cognisant of other factors that act as constraining influences on the development of wind energy. These factors generally fall into two categories:

- ***Electricity Network Constraints***
- ***Deregulation Issues***

Electricity Network Constraints

Due to geographical features and the location of urban centres in Ireland, the electricity network is generally weak in the windiest areas. The distribution network in some of these areas can only accommodate very limited amounts of additional generation. If the projected targets for wind energy deployment are to be met, significant upgrades in network infrastructure will be required. The planning of these upgrades will require consideration of factors such as:

- Predicted loads and demand.
- Ability of network to accommodate additional generation.
- Security and reliability of supply.
- Spatial planning factors.
- Projected installed generation capacity anticipated for a region.

Some of these factors have been discussed in depth in the Strategy report, and all require further in depth technical and/or financial feasibility studies before any conclusions are reached.

Deregulation Issues: As the electricity market has only recently been opened to competition from independent electricity suppliers, several issues have to be clarified by the Commission of Electricity Regulation such as:

- Promoting fair competition amongst suppliers
- Ensuring security, continuity and quality of electricity supplies.
- Use of system and "top up and spill" charges levied by Eirgrid.
- Trading arrangements between green and brown energy suppliers.
- Licensing of small-scale generators

Consultation papers have been circulated by the CER to discuss these and other issues, however, this is still ongoing at the time of writing and it is impractical to predict how the results of this consultation process will affect the market for green electricity.

These recommendations require targets be set at a regional level and these targets be supported by the DPE through continuation of the AER scheme and development of the "consumer led market". Local Authorities can then determine how these targets will be met and take a proactive role in determining suitable developments through advising developers of unsuitable locations and appropriate scale and size of development. These are discussed in detail in the following sections.

8.1 Government National Strategy – The Planning System

Perhaps the most important issue to be addressed is the lack of a planning strategy to deal with wind energy developments. All developers and NGOs, when surveyed, said the wind energy development should be included in the National Spatial Strategy. However, renewable energy only gets a very brief mention in the proposed National Spatial Strategy, and no detail is given as to how this will be planned for.

The proposed approach would involve incorporating the Department of Public Enterprise's energy policy and commitments to renewable energy targets into a planning framework that will minimise the impacts this scale of development will inevitably have. This could be achieved by;

- ***Setting Regional Targets for Wind Energy Deployment.***
- ***Revising the 1996 Wind Farm Development Guidelines***
- ***Updating Local Authorities Development Plans.***

8.1.1 *Setting Regional Targets for Wind Energy Deployment.*

In order to perform their task efficiently, Planning Authorities need guidance from a national level as to what levels of wind energy penetration is required on a regional (or even county by county) basis over a given period. Projections for wind energy growth indicate that by 2005 there will be 601 MW installed generating capacity from wind farms. This represents a rise in contribution from renewable energy sources to TPER (Total Primary Energy Requirement) from 2% at present to 3.75% in 2005 (DELG 2000). This would indicate that if the EU targets (12% TPER by 2010) were to be met this would require approximately an additional 2,000-2,500 MW of installed generating capacity from wind energy by 2010. This level of penetration is 20 –25 times the current installed capacity.

If this target (say, 2000 MW additional wind generating capacity) were divided amongst a suitable number of regions, each comprising of, say, 3-4 counties each, this

would give indicative figures as to the required generating capacity on a regional basis over the coming decade.

Obviously, how these target figures would be determined and allocated would necessitate the involvement of the DPE, Eirgrid, planning authorities, representatives of developers i.e. IWEA and Meitheal Na Gaoithe as well as representatives of the farming community and other stakeholders. Careful consideration of factors such as grid infrastructure, network capacity, wind resource and planning issues would be essential to these decisions. The future deployment of offshore wind farms would also have to be considered.

This type of planning for wind energy already exists in Denmark and has been a primary factor in the very strong growth of the wind industry experienced by the Danes recently.

There is provision for this type of regional management in the Planning and Development Act (2000) under section 21, which states, *"A regional authority may, after consultation with the planning authorities within its region, or shall at the direction of the Minister, make regional planning guidelines"*. .

This planning system would have several advantages for both planners and developers. From a planning authority's point of view they would know what was expected from their region and could prepare accordingly. It would also allow them to decide on the size and scale of suitable developments- i.e. it could decide that several small-scale projects would be preferable to a few large-scale developments or vice versa. Planners at wind planning conferences have raised these points, notably Daly (2000), *"If a county or region knew that an allotted percentage of additionally generated wind energy was to be provided for within its administrative area, it could prepare an appropriate spatial response and it could then determine a strategic consideration for connection to the grid."*

If planners had a clear indication of the likely generation capacity anticipated during the plan period, it would then be necessary to decide whether it should be concentrated into a specific location/area or a number of areas. The major advantage of concentration is that it enables a coherent approach to grid connection. However, concentration of wind farms then raises issues of visual impacts. Likewise, several small developments reduce the visual impact but raise grid connection issues. These are concerns that each local authority would deal with individually, in accordance with its own Development Plan but still having regard to national policy.

For developers, this type of planning would provide considerable more guidance on the siting of wind farms than is presently available. Once the Planning Authority knew what generating capacity was expected, and had decided on the appropriate type of development for a region, they could give clear indications to a potential developer on the suitability of a proposed project. If the proposal was considered to suit the local authority's Development Plan an informal planning consent could be issued. This could then be used to validate an application to the AER competition. This point is discussed fully in **Section 8.2 - *Planning Consents and Certification.***

8.1.2 *Revising the 1996 Wind Farm Development Guidelines*

The planning process in Ireland is governed by the Local Government (Planning and Development) Acts and Development Plans. Development Plans are at the core of the planning process forming an environmental contract between the local authorities and the people (ILRM 1989). They indicate the development objectives for the area and should include specific mention of wind energy development as recommended by the Guidelines for Wind Farm Development (DoE 1996).

As discussed in **Section 6.4** earlier, most Development Plans do mention wind energy, however, beyond general acceptance of the importance of wind energy and a few brief paragraphs about factors to be considered with each application, there is very

little guidance offered to the planner, developer or member of the public. This is an understandable situation considering the relatively recent arrival of wind farms to these shores.

In view of the targets set at both national and European level, these Development Plans will have to be considerably more detailed in order to accommodate the growth necessary to achieve these targets. Under the Planning and Development Act (2000) each local authority must make a new Plan every six years. It is recommended that each local authority should include the following either in its current plan or in the next one.

- *Background*
- *Planning Policy*
- *Environmental Impact Statements*
- *Unsuitable Locations for Development*

These are discussed below, it should be noted that these recommendations are based on the concept of regional targets for renewable energy as set out in **Section 8.1.1** above.

Background: Acceptance of the importance of alternative or renewable energy sources in reducing the emissions of greenhouse gases. Acknowledgement of the country's commitments to both national and European targets for renewable energy penetration within a specified timeframe. A commitment from the planning authority to support the development of such sources where it is consistent with the proper planning and development of an area.

Planning Policy The planning authority shall adopt a policy to develop renewable sources to the level required as dictated in national policy. In conjunction with the other local authorities in the region, a regional policy will be developed to ensure that the targets set on a regional basis are reached in a manner that will minimise amenity and ecological impacts.

In regard to renewable energy projects the planning authority shall assess each application in relation to a specific evaluation of each site. In the case of all wind energy projects of capacity greater than 2.5 MW shall require an Environmental Impact Statement under EU Directive 85/337/EEC be submitted with the planning application.

In assessing proposals for wind energy development the Planning Authority will take into account the recommendations of the DELG Guidelines on Wind Farm Development.

Environmental Statements: The Planning Authority will require that the following impacts will be addressed in the Environmental Impact Statement:

- Visual and shadow flicker impacts
- The impact of noise levels
- The impact of electromagnetic interference
- Ecological and avian impacts
- Hydrological impacts
- Archaeological impacts
- Natural heritage impacts
- Impacts on aviation and navigation

Unsuitable Locations for Development: The Planning Authority will consider the following factors in its determination of each wind farm planning application:

- Regional targets for wind energy deployment
- Significant wind energy potential
- Accessibility to the National Grid
- Suitability of the site having regard to the land uses
- Suitability of the size and scale of the project in the proposed location.

The Planning Authority shall determine specific locations where wind farm development is considered unsuitable. These areas could include:

- *Designated Areas:* Specific SACs, SPAs, or pNHAs where it is felt that a wind farm development would damage or destroy the flora, fauna or habitat that the designation is meant to protect. In the case of other designated areas a rigorous EIS would be necessary with the onus on the developer to prove that the development would not have a significant impact on the species in question. In this scenario, pre-planning consultations with Duchas and relevant NGOs would be necessary to determine appropriate monitoring programmes.
- *National Parks, Nature Reserves etc:* These would be precluded from any development, however the council may also preclude wind farms from within the zone of visual influence (ZVI) to preserve the visual amenity of these areas. In addition, archaeological sites identified by Duchas in their archaeological records must be provided for.
- *Scenic Views, routes etc:* The Development Plan already includes provision for the protection of areas of visual attractiveness and natural beauty. If a local authority felt that a certain view (e.g. the Burren, Co. Clare) was of significant importance to the tourism industry and felt that a wind farm would be detrimental to this, it would stipulate this region as being unsuitable for development.

By indicating unsuitable areas for development in its Development Plan, the local authority is implicitly directing developers to areas where development would be more favourable.

Ideally, the Planning Authorities would be able to identify and categorise areas into *"Strategic Areas, Preferred Areas, Areas open for consideration and No-Go areas"* as recommended in the Strategy for Intensifying Wind Energy Development (RESG

2000). However, these recommendations are unlikely to be implemented in time to help realise the national and European renewable energy targets for a number of reasons.

1. The "Landscape and Landscape Assessment Guidelines" (DELG 2000), under which these assessments would be made by local authorities, are still at the consultation draft stage and are unlikely to be ready for some time yet. The whole process of assessment will take further time (probably in the order of years). Considering the timescale imposed by the targets this tool will probably be of little use to planners in relation to wind farm planning in the near future.

2. Most planning departments are already under severe pressure due to understaffing and the current economic boom. The planning system *"is in a state of collapse""* according to the latest Ombudsman's report (I.T. 25/04/01). Thus, the manpower is not available to conduct such assessments.

3. The last reason is that a developer would be far better skilled at choosing the optimum site from a wind resource point of view than a planner. *"...Developers will know more about the market and potential for wind energy than any local authority officer. The help that these developers require is primarily with regard to the local authority's area of expertise – i.e. planning and directing potential developers to sites which should be acceptable"* (Cahn 1999).

8.1.3 Guidelines for Wind Farm Development

If Ireland is to realistically achieve the targets set out in the Green Paper and the EC White Paper, wind farms are going to be a feature of the Irish landscape to some degree. With this in mind, the Guidelines for Wind Farm Development need to be

revised. This revision should involve all stakeholders in the wind industry and areas that should be addressed are:

- Development Plans
- Section 4.9 - Wind farm visibility from roads and villages.
- Section 4.10 – Intervisibility of wind farms.
- Designated Areas
- Grid Connection
- Appropriate size and scale of developments
- Ecological monitoring programmes

These issues have been examined in other parts of this thesis and won't be elaborated upon further. However, it is imperative that the Guidelines are reviewed as soon as possible as they are the first point of reference for developers, planners and members of the public. This review should seek the views of all stakeholders and be directed towards achieving a balanced and responsible development of the wind industry in Ireland.

8.2 Government National Strategy

– The AER scheme and Third Party Access

It is recommended that the government continue to use the Alternative Energy Requirement (AER) scheme to encourage growth and development of the wind industry, however only for a limited time. The primary aim of the AER process was to deliver energy from renewable energy sources (RES) at the lowest cost. It has been successful at achieving the lowest cost but at the price of limited delivery of RES. The scheme needs to be modified to take account of the successes and failures of the previous calls for tenders and be directed towards helping to deliver a strategic national and regional renewable energy policy.

At the same time, in conjunction with the deregulation of the electricity market, far more focus must be directed towards creating a market for "green electricity" and therefore encouraging the development of independent generators who can sell power directly to the grid. Once this "consumer led" market approach has developed sufficiently, the role of the AER tendering process can be scaled down or refocused to helping small developers reach their potential. In the next sections modifications to the AER process are suggested and then follows a brief analysis of the market led approach.

8.2.1 The AER Scheme

As discussed in Chapter 5 some of the main problems with the present AER process were, from the developer's point of view:

- Overly bureaucratic and time consuming.
- Stop start nature of competitions.
- Failure to deliver targets.
- Discriminates against smaller developers.
- Doesn't encourage a consumer led market.

From the planning side difficulties encountered include:

- No consideration for planning permission in submission required.

- "Stop-start" nature puts planning departments under pressure.
- Certain areas are inundated with applications after results are announced.
- Competitive bidding forces developers into most sensitive areas.

Most of these constraints could be addressed if the AER competition was modified to include:

- ***A spatial aspect***
- ***Fixed price or "contour pricing"***
- ***"Rolling programme" style of competition.***
- ***Requirement for planning consent and certification.***

. Each of these is discussed in detail below.

Spatial Aspect to the AER Scheme

Under this proposal, the AER scheme would be administered on a regional basis as discussed in Section 9.1 above. Once regional targets for renewable energy sources were set by the DPE, the AER scheme could be adjusted to a regional framework where tenders would be offered for a certain percentage of this "RES quota".

For example, if the quota for the Northwest (comprising Counties Sligo, Donegal, Leitrim and Roscommon) was set at, say, 120 MW over a 24 month period, the AER scheme would offer 75% of this quota, 90 MW, as power purchase agreements (PPAs). The rest of the quota would be achieved through Third Party Access projects (i.e. direct sale to the grid) and through encouraging the development of small-scale and rural community projects.

Administering the tendering process in this manner would give clear guidance to developers, planners and the general public as well as ensuring that national and European targets are reached. Planners would be able to determine the scale and size

of projects they consider to be suitable as well as indicating areas unsuitable for wind farm development. Armed with this information, potential developers are far better informed as to the type of project and location that is likely to succeed and can plan accordingly. The general public would be informed and have an input as to the development strategy developed by their local authority as well as having the knowledge that all regions with equal wind resource are sharing an equal burden in achieving the targets.

As successive competitions pass, the portion of a regional RES quota offered as PPAs via the AER scheme could be reduced to a lower value, say 50%, depending on the success of TPA projects and small schemes.

Fixed Price (or Contour Pricing)

The price paid to successful projects in the AER scheme should be fixed, as the "least price" strategy employed by the Department of Public enterprise is contrary to the reasons for promoting renewable energy. The correct approach is to identify the true cost of electricity generated through fossil fuels and pay a price up to this level for electricity from renewable sources. This "fixed price" approach is recommended in the Strategy report (RESG 2000). This price should be index linked and based on the results of the previous AER competitions but also reflect increased operator expenses such as civil engineering and grid connection costs.

This fixed price would probably be in the region of ~4p/kW and would provide developers with a greater degree of assurance when trying to secure finance for a project. It also reduces pressure on developers to try and locate projects in the most exposed upland regions, however the desire for maximum profit would make these locations desirable, even without the AER scheme.

Another alternative to the fixed price system would be adjusting the price paid in a PPA according to the altitude of the project. In other words, create say, three "contour "

bands each of which would have a different price under the AER scheme. For example, if a project was located above 300 metres above sea level the price would be fixed at, say ~3.5p/kW, if it was between 150 m and 300m the price would be ~4p/kW and if it was below 150m the price would be ~4.5p/kW. If a project straddled two contours the price would depend on which band the majority of the project was in.

This type of pricing would encourage developers to seek the lower slopes, where the visual impacts would be lessened considerably. It would also encourage projects in regions such as the Midlands which, although having a suitable infrastructure for wind farms, up till now are not feasible due to the competitive nature of the tendering process.

However, this approach could lead to increased administration difficulties and would discriminate against independent generators supplying the grid directly who are paid a unit price regardless of location.

Rolling Programme of AER Competitions

As discussed in **Sections 5.2.2** and **5.3.2**, the "stop –start" nature of previous AER competitions brought pressure to bear on both developers and planners. If a "rolling programme" of tendering rounds was adopted it could alleviate most of these problems. This rolling programme would involve a series of AER competitions each of 24 months duration running back to back for the next 4 – 6 years. Regional quotas for renewable energy requirements would be announced for each period, as discussed in **Section 8.1.1**, and the AER scheme would offer a percentage of these quotas as PPAs. As each competition round "rolled" by, the terms of the next round would be decided on a basis of the success of the previous round.

As the consumer led market grows in strength the role of the AER competition could be reduced by reducing the percentage of contribution that the tendering process makes towards realising regional quotas.

This type of mechanism would have several advantages for planners and developers:

- It would avoid the present "stop – go" nature of development that favours neither party.
- As both parties know what is to be generated over each period, they can plan for that period accordingly.
- The added security of knowing that the government is committed to supporting the development of wind energy for the long term would add financial security and increase market confidence in the industry
- It would help support the small developer who won't be stymied by deadlines etc.
- As each application will be decided upon within a spatial planning framework, the time spent preparing and processing planning applications will be more focussed on relevant issues and should result in a more satisfactory relationship between developers and planners.

Planning Consent and Certification

In order the make the administration of the AER scheme more efficient and less time consuming it is recommended that conditions of entry be imposed on developers. In order to enter into the tendering process the potential developer should show:

1. That the proposed project has a reasonable chance of acquiring planning permission.
2. That the developer is both technically and financially capable enough to ensure the development will be completed.

The former can be assured by furnishing the informal planning consent referred to in **Section 8.1.1.** Possession of a planning consent would not in any way suggest that

project would implicitly get planning permission. It would be merely a statement verifying that the proposed development was not contrary to the local authority's Development Plan and would be considered in the context of the national renewable energy strategy. This approach is consistent the more proactive role recommended in The Planning and Development Act 2000 – Section 11 *"... a Planning Authority shall take whatever measures it considers necessary to consult with the providers of energy ....in order to ascertain any long term plans for the provision of the infrastructure and services in the area of the Planning Authority"*

The latter can be assured by securing a licence from the Commission of Electricity Regulation (CER) to supply electricity to the National Grid. Section 14(a) of the Electricity Regulation Act 1999 already makes this a provision for independent developers wishing to sell electricity directly to consumers. The application process seeks to ensure the availability of appropriate financial, managerial and technical resources to comply with the licence.

Once a potential developer had secured these two documents, he/she would be eligible to tender for a PPA contract under the AER scheme. By ensuing that these requirements are met prior to submitting a tender, the administration time can be spent assessing the most suitable proposals rather than weeding out the weak or unlikely ones. This would provide the small developer a more secure framework within which to operate, as possession of these documents would ensure that each proposal has an equal chance of succeeding.

8.2.2 The "Consumer Led" Approach

In conjunction with the modified AER scheme described above, the government should mount a major and sustainable campaign to promote the sale of "green electricity". This would involve long running advertisement promotions in various mass media forms with the aim of creating a consumer led market for green energy. In this

way independent wind generators would be able to sell green electricity, via Eirtricity or other independent suppliers, directly to consumers.

Under this system, customers can choose to purchase all or a percentage of their electricity, usually at a premium, from an independent power supplier. The electricity supplier, in return, guarantees that each unit of electricity corresponds to a unit entering the electricity supply network from a renewable energy source.

There are several advantages to marketing green energy:

- It provides a market for renewable energy where none existed previously.
- It provides the customer with an environmental choice.
- It increases public awareness of environmental issues.
- It helps increase acceptance of wind turbines.

However, there are also disadvantages:

- It operates contrary to the "polluter pays" principle.
- It erroneously makes renewable energy appear more expensive than it is.

This type of marketing of green electricity already exists in the Netherlands, Sweden, Germany and Northern Ireland and has enjoyed considerable success (RESG 2000).

As the Green Paper states *"it is envisaged that, in time, as renewable energy operators develop the market opportunities ...for direct sale to final customers, the need for AER support will diminish"*. As the market sector grows the AER scheme can be phased out in stages as outlined previously.

8.3 Local Community Benefit

An issue that arises frequently in objections to wind farm proposals is the resentment that a local resource is being harnessed with little direct economic benefit, except to the landowners, or the Local Authorities in the form of rates payable. Concern is often expressed of fears that property values will decline in the vicinity of a wind farm. These concerns could be allayed by directly promoting small-scale development of wind energy by rural communities and by obliging developers of large-scale projects to provide some form of benefit to the local community. These are discussed below.

8.3.1 Small-Scale Renewable Energy Scheme

As recommended in the Strategy report (RESG 2000) a "*small-scale renewable energy scheme*" should be developed to benefit rural communities and individuals. This should be operated in conjunction with the modified AER and Direct Sale schemes outlined in **Sections 8.2.1** and **8.2.2** above. This would require that this scheme would also be administered on a regional scale to help accomplish the regional targets set by the DPE. It is recommended that a threshold of 2.5 – 3 MW be set on these projects to avoid interest from commercial operators. The price offered to these schemes should be higher than that offered to large-scale developers to reflect economies of scale. These schemes would have the benefit of increasing community awareness of the technology, allaying some concerns about the impact of turbines as well as providing a discernable benefit to the community.

8.3.2 Community Benefit from Large-Scale Projects

It is recommended that developers of large-scale projects be obliged to offer some form of benefit to the host community. This should be a condition of the license issued by the Commission of Electricity Regulation. There are several models as to how this benefit can be offered, the two most commonly used are:

Local Ownership/ Shareholdings: The developer offers a certain portion; say 25%, of the development to the local community in the form of shares. The local community

can invest in the wind farm and, as the wind farm becomes operational and generating profit, receive a dividend. Once the debts are paid on the project, the locals retain the 25% share and profit from the returns generated. Another benefit of these schemes is that it is an additional source of funding for the developer. In the case of over subscription of shares, priority should be given to residents who will live closest to the turbines. This type of scheme has received very positive response for the Wexwind Co-op who have planning permission for a wind farm in Ballycogley in Co. Wexford.

Community Chest: In this model the developer denotes a certain percentage of the annual funding generated by a wind farm to a "community chest". Certain guidelines would be established to determine how this money is spent – preferably on projects that demonstrated benefit to the community as a whole. Eirtricity operates schemes similar to this in the communities close to some of their wind farms.

By introducing these measures, rural communities would get to benefit directly from having a wind farm in their locality and this positive perception of wind energy would help reduce the level of local opposition to proposed projects.

8.4 Designated Areas

The identification and protection of designated areas should be a government priority especially in regard to the EU Natura 2000 network. This protection must be seen to be effective and unbiased. At present there are several contentious issues regarding the protected status of these areas which must be resolved. As wind farms only account for a very small proportion of developments proposed in these areas, it is impracticable to suggest solutions to these issues in the context of wind farm development.

However, there is a case to be made for examining the reason for the designation when Planning Authorities receive an application for a wind farm in these areas. If, under the scrutiny of a comprehensive EIS, it appears that the protected species will suffer little or no impact, then the proposal should be considered, subject to planning conditions. Likewise, developers have an obligation to afford as much protection as possible to the site during construction and operation of the project. This should be in the form of thorough Before After Control Impact (BACI) monitoring programmes in consultation with the National Parks and Wildlife staff and with the relevant NGOs.

Conclusion

At present the development of the wind energy industry has been relatively slow and has been regulated reasonably well by the present legislative framework. Opponents to individual projects can voice their concerns at the initial planning stage and have the option of appealing to An Bord Pleanala if not satisfied. Developers have to prove the viability and integrity of their projects at several stages, e.g. with an EIS at the planning stage and technical and financial evaluation during the AER tendering process. Although this development has been of an ad hoc nature to date, at least it has provided the opportunity for all stakeholders to develop their understanding of wind energy technology.

However, maintaining this status quo will not achieve the targets set in the EU White Paper for 2010. These targets indicate that significant accelerated growth of the wind energy industry will be necessary over the coming decade. This growth will require a cross sectoral approach involving the Department of Public Enterprise, Planning Authorities, the electricity sector, local communities and NGOs to ensure that the increase in wind energy penetration occurs in a well regulated and responsible manner.

In order to facilitate this cross sectoral approach, the government must take a proactive role in:

- Defining the targets to be met on a regional level.
- Indicating the market mechanisms that will help achieve these targets i.e. further AER schemes and the "consumer led" market.
- Supporting and developing these mechanisms.
- Increasing public awareness through media campaigns and supporting small-scale rural developments.

Once these targets are set Planning Authorities can play a more proactive role in indicating unsuitable sites initially, and determining the appropriate size and scale of

developments it considers suitable. With time and experience, in later Development Plans it could then indicate areas considered suitable for further development.

By regulating developers through a licensing system operated by the Commission of Electricity Regulation, it can be ensured that wind farms have a tangible benefit for the host community and that amenity and ecological impacts are kept to a minimum. With appropriate support from the Government, developers will benefit from a developing market for their product, which will help secure financing for future projects.

This thesis has outlined how this approach could be facilitated which would require significant changes to the present system of support and planning for wind energy. However, the author feels that this level of proactive action is essential if the targets set by the EU are to be achieved.

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Appendix A – Developers and NGO Surveys

Developers Survey

Background:

Company Name:

How many wind farms does your company operate (in Ireland)?

Where are they located?

What is the installed capacity of each?

Market Mechanism

Have any of your company's wind farms received an AER contract?

Do you think that the AER tendering process is the best way to intensify wind energy development in this country?

From a developer's point of view, what are the advantages and disadvantages of the AER process?

Would a Feed-in tariff system (as used in Germany, Spain and Denmark) be better suited to intensify wind energy development in Ireland?

From a developer's point of view, what are the advantages and disadvantages of the Feed-in Tariff system?

Planning

What were the biggest obstacles to obtaining planning permission?

On average, how long before a final planning decision was reached (after appeals etc.)?

Did this time frame put pressure on other aspects of the project (funding, etc.)?

Could you suggest any improvements to the present planning system as regards wind farm development?

Should wind energy be included in the National Spatial Strategy?

Given the history of wind farm applications in various Local Authority regions would this influence any decisions for the location of potential sites for future wind farm projects?
(In other words, would you favour certain Local Authorities over others?)

Do you think all SACs, NHAs and SPAs should be precluded from wind farm development?

How can local communities benefit from wind farms development?

Does your company offer any form of local community benefit?

Do you feel the recommendations suggested by the Renewable Energy Strategy Group report "Strategy for Intensifying Wind Energy Deployment" is a good way forward for the wind energy industry?

Are there any issues that you feel the strategy group overlooked?

Would you have any recommendations you would like to see included?

NGO's Survey

Name of Organisation:

Background (any information packs/ press releases etc. about your organisation would be greatly appreciated.)

How many branches/clubs of your organisation exists in Ireland?

How many members? (Approx.)

When was it founded?

Wind Farms

Has your organisation objected to any wind farms planning applications?

If yes, how many?

On what grounds?

Do you feel the Irish planning system is adequate in its role of protection of the environment?

How could it be improved?

Should all NHAs(National Heritage Areas), SACs (Special Areas of Conservation),and SPAs (Special Protection Areas) be precluded from wind farm development?

Are there other areas that should be precluded from wind farm development?

Would your organisation object to an application in any of these areas?

Is the government (Duchas) doing enough to protect these areas?

Should wind energy be included in the National Spatial Strategy?

Would it be helpful if potential developers contacted relevant NGO's prior to planning application to discuss possible conflicts, etc.?

Please rate the following potential impacts of a wind farm in order of importance of an Environmental Impact Statement
(In other words, which impacts should the EIS focus on most?)

Visual Amenity	___	**Bird life**	___
Noise	___	**Peatland**	___
Shadow Flicker	___	**Wild life**	___
Electromagnetic Interference	___	**Hydrology**	___
Recreational Amenity	___	**Land Use**	___

Are there other impacts which should be considered?

What ecological monitoring should take place

(i) Prior to construction?

(ii) Post construction?

What "indicator" species should be monitored?

Other Comments

Appendix B – NGO information sheets and Press Releases

IPCC Information Sheet on Wind farms **(Source www.IPCC.ie)**

Windfarms and Upland Bogs

Non-Governmental Organisations Observations on Irish Wind Farm Programme

The undersigned non-governmental organisations, recognise the fundamental importance of increasing Ireland's renewable energy sector as part of international efforts to combat climate change and reduce dependency on fossil fuels.

We further recognise that wind energy is a clean renewable, non-polluting source of energy, which is deserving of even greater government support than it currently receives when taking into account the external environmental costs posed by electricity generated from fossil fuel sources.

We support the Department of Public Enterprise's renewable energy strategy which aims to source 10% of Ireland's electricity supply from renewables by 2010 and other efforts to reduce Ireland's dependence on imported fossil fuels and to increase energy efficiency. We believe that much greater effort is required if Ireland is to meet its commitment of stabilising greenhouse gas emissions at +15% above 1990 levels, and that a radical programme of demand-side management and end-use efficiency will be necessary to curb the sharp rise in energy demand.

However, we are concerned that in the absence of a clear strategy governing wind farm developments and their environmental impacts, their full benefits may not be realised to the host communities or to the Irish economy.

We have recently discussed concerns felt over the development of wind farms, particularly in so far as they affect upland wildlife, habitats and sensitive visual amenities. We therefore wish to make the following comments on the nature and implementation of the current grant schemes relating to wind farm developments, which recognise their overall benefits in comparison to fossil fuel sources.

Specifically we wish to make the following points in relation to the Governments wind farm programme.

1. Habitats protection

Although the Department of the Environment has published guidelines for wind farm schemes (Wind farm Development-Guidelines for Planning Authorities, September 1996) we feel that environmental concerns need to be integrated more directly into proposed developments.

The current criteria for eligibility under the AER schemes require only that the applicants secure planning permission for the proposed development. No assessment of the site from an ecological or biodiversity perspective is undertaken by the Department and only commercial and technical criteria are used to evaluate applications. This represents a major weakness in the current AER schemes. It has the effect of placing tremendous pressure on sensitive upland areas, which, due to gaps and inconsistencies in the designation of Natural Heritage Areas's and Special Areas of Conservation's may not have been surveyed or designated under the draft list of SAC's forwarded to the European Commission. It is critical that the siting of wind farms is placed in a national context of inadequate upland habitats protection and enforcement, and that the Department revises the current scheme to specifically rule out the location of wind farms in ecologically sensitive areas, in or adjacent to designated habitats.

The Department of Public Enterprise and Employment should commission a land survey use, in association with relevant development and conservation departments, to identify those areas best suited to wind farm sites. This selection process should give due consideration to the biological and scenic value of areas. Such a scheme should be undertaken as a matter of priority.

2. Surveying of sites

The siting of wind farms in appropriate areas can have adverse affects on local ecology and biodiversity, especially upland bog areas and bird habitats. The National Parks and Wildlife Service should be required to carry out rigorous surveys of proposed sites as part of the site selection process in advance of planning approval and the granting of aid under the AER scheme. In general there ought to be much closer co-operation between the NPWS and the Department of Public Enterprise in assessing applications under the AER schemes relating to wind energy.

3. Environmental Impact Assessment and the Planning Process

Currently, there is no mandatory Environmental Impact Assessment for wind farm developments and there are some inconsistencies over the status of the biological importance of sites in recent An Bord Pleanala decisions. It is essential that all planning authorities explicitly recognise, on an equal footing, the ecological importance of sites in conjunction with visual amenities. We feel that all wind farm proposals, irrespective of size should be subject to full and proper Environmental Impact Assessment Surveys under EU Directive 85/337/EEC.

These surveys must address, inter alia:

(a) Visual and Noise Impacts

The visual and noise impact on areas in order to fully assess the visual impact of wind farms, local authorities should insist on adequate photo-montages or computer graphics to facilitate assessment. Zones of visual influence should

be clearly defined at distances of 250m, 500m, 1000m, 1500m, 3000m, and 5000m accompanied by appropriate photo-montages and/or computer graphics.

In order to fully assess the impact of noise from a wind farm development, local authorities should insist on noise contour maps that take into consideration the topography of the immediate area and should include information on noise levels at distances of 100m, 200m, 500m, 1000m, at wind speeds of 5m/s, 8m/s and 12m/s. Noise levels should not exceed 40dB leq at the nearest noise sensitive property.

(b) Bird Impacts

From the research completed to date, there is sufficient evidence to determine that wind farms do impact on birds, however further research over a longer period is required before the effects can be established. Given this situation the precautionary approach to windfarm development in ecologically sensitive sites, must be applied. As such the following basic guidelines to wind farm development should be considered:

There should be a presumption against the siting of wind farms in ecologically sensitive sites. Many of these sites are designated as Special Protection Area's for birds, or are proposed as Natural Heritage Areas and Special Areas of Conservation. However, as there has been no recent and comprehensive survey of upland breeding birds, there are sites of potential conservation importance which have not been identified and are therefore not protected by the existing suite of statutory designations.

To ensure that upland sites of potential importance for bird conservation are identified and adequately assessed wind farm developments in upland areas of appropriate habitat should be subject to statutory environmental impact assessment as described by the European Communities (Environmental Impact Assessment) Regulations, 1989.

The Environmental Impact Assessment, should include a survey of the birds breeding and feeding within the impact area over a winter and summer season. During this period at least two winter and three summer visits should be completed. This will provide the minimum information required upon which to assess the conservation importance of the area and to determine whether or not the development is appropriate. Should the development then go ahead, this will also provide the basis for a monitoring programme.

Long term monitoring programmes should be implemented for a number of selected proposed wind farm sites. If the above guidelines are implemented, such sites will be of marginal conservation importance, however the data collected will be of use in determining the long term effects of wind farm developments on some bird populations. This will help to inform decisions regarding the siting of future developments. In such cases, pre - construction baseline data on the birds should be collected over a 2-3 year period and a range of ecological variables should be monitored both during and post - construction. Long term monitoring programmes to investigate impacts such as bird mortality and

disturbance effects, should also be introduced at a number of existing wind farm sites.

(c) Upland Bog and Montane Heath Impacts

All upland areas scheduled for wind farm sites must be adequately surveyed for their habitat value. Where a site is found to be of conservation importance a bogland survey must be undertaken by technical experts from the National Parks and Wildlife Service. This is particularly important as no upland blanket bog survey or mountain heath survey to identify Natural Heritage Areas and Special Areas of Conservation has yet been undertaken by the National Parks and Wildlife Service. This has resulted in sites of high conservation value for their habitat being damaged by inappropriate wind farm schemes in Ireland.

4. The pricing structure for renewable energy

We note with concern that the low price of 4p per kW/hr offered to producers of wind energy tends to compel producers to locate wind farms in upland areas so as to increase the economic viability of the proposal. We recommend that the Department undertake an immediate review of the pricing structure under the AER schemes, especially given that the price offered to renewable energy producers has not increased since 1987. This review should attempt to ensure that the pricing structure makes non-upland areas attractive for wind energy producers.

5. The liberalisation of the electricity sector

The current debate surrounding the liberalisation of the electricity sector in Ireland has not taken sufficient account of the environmental impacts of electricity generation, especially from fossil fuels. We recommend that the forthcoming legislation set a clear target for wind energy generation with powers for the regulator to insist on wind farms being located in environmentally appropriate areas.

6. Benefits to local communities

Wind energy affords major opportunities for local communities to engage in sustainable development (see DEAT 1997 report on local and community owned wind energy projects). We urge the Department to prevail upon local authorities as part of their Local Agendas 21 to develop wind energy projects in conjunction with local communities under the AER scheme and the third party access facility. As long as wind farms are associated only with large schemes supplying energy to the national grid there will be little appreciation of their value and benefits. Wind farm developers should be required to offer a percentage of the energy they generate to local host communities. In addition, further grant aid should be made available to very small schemes to demonstrate the potential for energy self-sufficiency for local communities.

It is our opinion, that the implementation of the above suggestions would encourage greater local and national support for national wind farm schemes.

Changes along the lines suggested above would also ensure that wind farm scheme fully integrate environmental concerns into their planning and operation ensuring their sustainability and harmonisation into the National Biodiversity Plan being developed for Ireland by the Department of Arts, Heritage, Gaeltacht and the Islands.

If the Government were to adopt such guidelines, it would help prevent the recurrence of events already witnessed in Donegal where wind farm developments have been subject to appeal to An Bord Pléanála, or have been subject to investigation by the EU Commission for contravention of the Habitats Directives, or have not conformed to the Department of the Environments own guidelines.

On behalf of:

- Irish Peatland Conservation Council
- An Taisce
- Birdwatch Ireland
- Earthwatch
- Irish Wildlife Trust
- Mountaineering Council of Ireland

Press Release from NGOs on designated areas **(Source www.IPCC.ie)**

CONSERVATION GROUPS CLAIM WILFUL DAMAGE TO WILDLIFE SITES CONTINUES

For release 25th May 2000 - BUSWELLS HOTEL

Five leading conservation NGOs called today for the immediate enforcement of the European Habitats Directive. The five environmental groups said that sites "protected" under the Directive as Special Areas of Conservation [SAC] continue to be damaged and destroyed.

Two years ago, the five conservation groups released a list of 23 threatened wildlife sites. Today, as a result of their on-going monitoring, they highlighted the new additions to this list and the continuing damage to the original 23 sites.

While in some cases sites are being destroyed as a by-product of other developments, in other cases it appears to be intended to destroy their scientific value in order to avoid SAC wildlife designation.

SACs are legally protected under the EU Habitats Directive from the time the landowner is notified of the proposed designation. Landowners are informed that certain activities cannot be undertaken without the consent of the Minister. However, many are unwittingly or blatantly disregarding this protection.

The groups highlighted SACs which have been destroyed or are under immediate threat of destruction.

The sites are:
KILDARE: Pollardstown Fen - Kildare By-pass, road scheme "in-cut" proposal
WICKLOW: Brittas Bay - Destruction of dunes to avoid designation
LIMERICK: Barrigone- quarry development
KILDARE - Moud's Bog - extension of industrial moss peat extraction
OFFALY - Clara Bog - severly damaged by burning of the site
WEXFORD Wexford Harbour SPA, infill of 5 ha of intertidal mudflats at Ferrybank, and incomplete classification of the harbour.

The groups called on the Minister to take whatever steps were necessary to ensure Ireland's compliance with community law in protecting these important sites.

NGO Comments:

Peter Foss, **Irish Peatland Conservation Council** - "The Habitats Directive provides the means to protect the natural heritage we boast of so proudly. We need to do more rather than
the minimum to protect wildlife".

Shirley Clerkin, **Irish Wildlife Trust** - "If SAC protection is to really meaningful, planning authorities must consider the environmental impacts of proposed developments within SACs".

Tony Lowes, **An Taisce** - "If we allow any but scientific arguments to influence our decision making, we open the doors to abuse and corruption."

Paul Galvin, **Birdwatch Ireland** "It is time we started taking our responsibilities seriously. Our obligations under the Birds and Habitats Directives must be implemented and those sites important for nature conservation must be protected now."

BRIEFING NOTE SACS IN IRELAND

The aim of the European Habitats Directive is to create a network of protected wildlife sites in Europe. Each member state must designate their most important natural areas as Special Areas of Conservation. The Directive specifies the scientific criteria on the basis of which SAC sites must be selected and very strictly curtails the grounds that can be used as justification for damaging a site. The network of sites is referred to as NATURA 2000 and includes SACs (Special Areas of Conservation) and SPAs (Special Protection Areas) for birds.

The Background to SAC Protection

o The Habitats Directive was transposed into Irish law by the European Natural Habitats Regulations in 1997.

o Sites are supposed to be protected from the time of notification to the landowner a process which has taken place since 1997.

o The SAC regulations also amends the 1963 Planning Act and requires planning authorities when considering an application for a development that is likely to have a significant effect on the SAC, to ensure that an appropriate assessment of the implications of the development for the conservation status of the site is undertaken.

o Sites may contain priority or non-priority habitats and species. Priority habitats include raised and blanket bogs, some types of fens, bog woodlands and turloughs.

o The only justifications for damaging a qualifying "priority" site are "considerations relating to human health and public safety, to beneficial consequences of primary importance of the environment, or further to an opinion from the European Commission, to other imperative reasons of overriding public interest." Justifications for damaging a non-priority site include economic and social considerations. In thoery, therefore,no other consideration should be used to override the SAC designation for a site.

o Should damage occur to a site, Duchas have powers to:
(1) seek an injunction to stop the works
(2) order the landowner to restore the site

o A person is guilty of an offence:
(1) if they carry out notifiable works on a site withoutMinisterial consent
(2) if they fail to carry out restoration works as directed bythe Minister

Progress to Date

The government has put forward 259 sites to the European Commission forconsideration as designated SACs, accounting for 4.3% of our land area.According to the Commission, Ireland has put forward the 3rd smallestpercentage of national territory for designation, followed by closely by Belgium and Germany. Even tiny Luxembourghas put forward 13.6% of its national territory for designation.

Planning impacts on SACs

In a recent report the Irish Wildlife Trust have shownthat 70% of planning applications within SACs are successful. Only one quarter of all planning applications within SACs are looked at by Duchas. Duchas object to only 8% of planning applications.

Aquaculture impacts on SPAs

Birdwathcx Ireland have shown that 26% of aquaculture operations are within SPAs
Duchas routinely approve licence applications in SPAs.
Dept of Marine and Natural Resources mostly follow the comments of Duchas in relation to wildlife issues.

ENDS

Appendix C – Letters from NGOs to the Media

Letter to the Irish Times 29th Feb. 2000 from the Mountaineering Council of Ireland

ENERGY FROM WIND TURBINES

Sir, - Recent correspondences in your columns on this subject prompts me to respond from the perspective of recreational users of upland areas. We consider wind power a renewable energy resource which is highly appropriate to Irish conditions. However, upland wind farms may affect other assets not readily renewed and we should also consider these in planning for the provision of such schemes throughout Ireland.

In the Irish contexts we define uplands as land over 300 metres above sea level. Less than 5 per cent of our island is upland. Within such areas unique and fragile ecosystems have evolved. Disturbance to these can have long-term consequences, as shown recently by the disastrous attempt to intensify upland sheep farming. Our mountain scenery is of immense value, both for tourism and in the affections of the communities who live in mountain areas.

The availability of stronger winds on high ground makes upland ridges a prime location for wind farms. The severe conditions which determine the character of hill country are seen as providing additional power, and hence a greater return on investment. Unfortunately, this return is in many cases gained at the cost of scenic quality and of pressure on such rare upland species as merlin, hen harrier and red grouse.

There are many alternative sites for windmills. The first large Irish wind-farm has worked for over a decade in the great bogs around Belacorrick. Studies have been commenced for an offshore scheme on the Kish Bank. Upland sites are not always of primary scenic value and it is accepted that lower hills may be suitable for this use. However, where a scheme is proposed on a high central ridge forming part of a major mountain grouping it would not in our view be acceptable.

In association with our locally based affiliate clubs, our council's policy is to oppose through the planning process the use of upland sites for inappropriate developments, be they hydro, wind power or agricultural intensification. - Yours, etc.,

MILO KANE, Environment Officer, Mountaineering Council of Ireland, Walkinstown, Dublin 12.

Letter to the Irish Times 6th March 2001 from the IPCC.

INERTIA ON CONSERVATION

Sir, - Michael Viney (Weekend, January 27th) stated that conservation organisations in Ireland believe that the State is doing as little for nature conservation as it can get away with. We would like to clarify how this view has been arrived at.

For the past six years the IPCC has been calling on Dúchas, the State agency responsible for nature conservation, to carry out a survey of fens in Ireland. These valuable wildlife areas, recognised by the EU Habitats Directive, are under increasing threat (e.g. Pollardstown Fen), and unless a State-wide survey is undertaken many sites may be destroyed before their value is recognised.

The Irish Fen Inventory undertaken by the Irish Peatland Conservation in 2000 identified 65 new conservation-worthy fens. These are not listed by Dúchas land have no legal protection. They are under immediate threat from drainage, landfill and reclamation. The IPCC has presented the results of its study to Dúchas in the hope that this would initiate a comprehensive national survey of fens.

In the past Dúchas has told us that a fen survey could not be carried out because of lack of finances. This excuse is no longer valid. The IPCC has been informed by senior Dúchas staff that funds have now been set aside for such a survey.

Although Dúchas agrees that a survey is required because of their incomplete information on fens, failure to implement the survey now seems to be due to a lack of political will and administrative failures within Dúchas.

In the same Michael Viney article, a director of Dúchas, Dr Alan Craig, was quoted as saying that a widespread breakdown of trust (between nongovernment organisations and Dúchas) had occurred and that non-government organisations do not co-operate with Dúchas. The IPCC feels these comments are misleading and that in fact any difficulties are the result of failures by Dúchas to engage in real, meaningful dialogue and consultation with environmental groups in Ireland. Environmental groups are not treated as partners in the common goal of nature conservation in his country. - Yours, etc.,

PATRICK CRUSHELL, MSc, Conservation Officer, Irish Peatland Conservation Council, Capel Street, Dublin 1.

Appendix D – Details of AER V

Details of Latest AER V competition. (Only relevant text included full document can be accessed at www.dpe.ie/energy/alternative)

1. INTRODUCTION

1.1 The Government established a target to deliver an additional 500 MWe of renewable energy based electricity generating plant by 2005 (Green Paper on Sustainable Energy).

1.2 Subject to receiving clearance from the EU Commission under the State Aid provisions of the Treaty in the form of this AER V competition following prior notification ("the EU Commission Clearance"), the Minister of State ("the Minister") at the Department of Public Enterprise ("the DPE") has initiated a competition aimed at securing additional electricity generation capacity from wind energy, hydro energy and biomass including landfill gas to deliver an additional indicative target of 250 MWe of renewable energy based electricity generating capacity ("the Competition"). Biomass shall mean biomass with insignificant impurities, meaning the biodegradable fraction of materials from agriculture and forestry, wood and cork waste, biodegradable by-products of the pulp and paper industry and the decomposition of the biodegradable faction of separated municipal wastes and landfill gas. Proposals in the biomass category may include plants requiring the use of some fossil fuel source to prepare and/or ignite and/or sustain combustion of non-fossil fuel(s). Such biomass plants may be considered eligible for this competition provided that they are designed and operated to use the minimum of fossil-fuel necessary for that purpose and provided that in any event less than 10% of the fuel input is from fossil fuel sources. The use of such fossil fuels will be subject to monitoring for the duration of the Power Purchase Agreement. The Minister reserves the right to alter or amend any aspect of this Competition as a consequence of any directions or requirements of the EU Commission.

1.3 It is intended that offers of Power Purchase Agreements ("PPA's") will be made to those applicants selected in accordance with the conditions set out herein. Offers of PPA's will be made up to the thresholds in each technology category as decided by the Minister.

1.4 The Electricity Supply Board ("the ESB") will offer successful applicants a PPA for the purchase of their net electricity output from a generating station accepted by the Minister on foot of the Competition, for a period not exceeding 15 years. As at the time of publication of this document, the restructuring of the ESB is proposed, reference in this document to the ESB shall be read as including the ESB or an appropriate legal successor.

2. FRAMEWORK OF THE COMPETITION

2.1 Invitation

2.1.1 The underlying principle of the Competition is that the Minister invites prospective generators to make a formal application to build, own and operate new wind, hydro, biomass including landfill gas electricity generating facilities, to supply electricity to the ESB under a PPA for a period not exceeding 15 years duration and not extending beyond end year 2018.

2.1.2 The electricity plant contracted under this programme must be new plant neither built nor under construction on 1 May 2001, but otherwise may locate at any site *e.g.* adjacent to existing plant.

2.2 Evidence of Competency to deliver the project within a time limit

2.2.1 In addition to awaiting the EU Commission clearance an offer of a PPA will not be confirmed unless: -

(i) the project submitted has the necessary permissions from the Commission for Electricity Regulation (CER). Where a final decision by the CER is awaited, the Minister may in his sole discretion issue a conditional offer of a PPA provided acceptable evidence of receipt of a relating application by the CER is furnished;

and

(ii) full planning permission has been obtained for the site for the construction of an appropriate electricity generating plant and this is demonstrated to the Minister.

2.2.2 For the avoidance of doubt full planning permission for the site means that the relevant planning authority has issued a planning permission for the construction of the appropriate electricity generating plant at the site, that the statutory appeal period has expired or that any appeal to An Board Pleanala has been determined. Applications will not be accepted from applicants for sites, for which the grant of planning permission is awaited, or for which the statutory appeal period has not expired, or for which the determination of any appeal to An Bord Pleanala is awaited. Furthermore each applicant must be able to demonstrate that it has complied with or is in a position to comply with all material conditions attaching to any such planning permission and that it has received all other consents whether statutory or otherwise, required to build, own and operate the electricity generating plant at the site.

2.2.3 In addition applicants will be required to demonstrate evidence of:
(i) ownership of the site or of a sufficient leasehold interest for a term of not less than the duration of a PPA together with a binding agreement to enable access to the site (if applicable),
(ii) good standing with the Revenue Commissioners for tax purposes by producing a valid Tax Clearance Statement from the Revenue Commissioners or in the case of non resident applicants, a suitable statement from the Irish Revenue Commissioners.

2.2.4 All projects successful in the competition must be installed and selling electricity by the 31st December, 2004.

2.3 Capacity Limits

2.3.1 The competition is structured to secure an indicative target of 255 MWe of newly constructed renewable energy based electricity generating plants, the indicative targets for the technologies being as follows:

Wind 240 MWe of which 40 MWe will be reserved to small-scale wind project as categorised below.
Biomass 10 MWe
Hydro 5 MWe

2.3.2 Wind energy will be considered under two categories as follows:
(i) - projects up to 3 MWe ("small scale wind projects/small scale wind category").

(ii) - projects above 3 MWe up to the indicative target ("large scale wind projects/large scale wind category").

2.4 Ownership limits and project size limitations

2.4.1 No ownership or project size limitation shall apply up to the project size limit in the small scale wind category and in all other categories up to the overall technology thresholds in individual categories as detailed in clause 2.3.1 above.

2.4.2 The primary purpose of the small scale wind category is to increase awareness of and to encourage the deployment of the technology at the local community level thus, potentially, increasing the acceptability of the technology generally into the medium term and beyond. This aim will only succeed with direct local community participation in such projects. Accordingly owners, of successful large scale wind energy projects and/or owners of wind energy projects which are already contracted to the ESB under a previous AER round in the wind category, shall not be permitted to apply in respect of a project for capacity under or up to 3 MWe in the small scale wind category whether beneficially or otherwise or through or by means of any nominee, body corporate or trustee, whether jointly or otherwise with any other person or legal entity whatsoever or by means of any connection with any other person or body corporate or legal entity howsoever arising in any such projects in the small scale wind category. This obligation shall constitute a condition subsequent in all relevant PPA's.

2.4.3 Although this may appear complex the reality is simple. It is not intended that a large-scale commercial operator should enter the small-scale wind category for reasons stated herein. Therefore, an applicant in the large scale wind category of this Competition or any successful applicant in a previous AER round in the wind category should not enter any application in the small scale wind category of this Competition. Any such applicant should also ensure each of its constituent owners whether legal or beneficial (e.g. each shareholder nominal or otherwise or partner etc.) is aware of and adheres to this condition. Failure to comply with this condition may result in cancellation of offers or where such a breach later comes to light, cancellation of the PPA.

2.5 Purchasing terms

2.5.1 Purchase prices

The price cap in each category being the price will be -

(a) (I) Large Scale wind category - 4.812 eurocents per kWh
(ii) Small Scale Wind category – 5.297 eurocents per kWh
(iii) Hydro – 6.475 eurocents per kWh
(iv) Biomass – 5.916 eurocents per kWh

and the price cap and tendered prices will be at the trading point *(the trading point being the notional interface between the Distribution and Transmission Systems where wholesale trading of electricity occurs)*

(b) Bid prices/kWh greater than the above prices will not be considered.

(c) Payments will be made monthly in arrears at the tendered bid price plus or minus SToD adjustment (see 2.5.2 below) and indexed annually and proportionately on the basis of the change in the Consumer Price Index (average of the Feb., May, Aug., November quarterly values for all items) of the preceding year according to the formula set in 2.5.3 below.

Section III.

Checklist of documents to be submitted

(a) Attachments

1. Copy of permissions from the CER or evidence of the related application/s to the CER as lodged with the CER.

2. A copy of the full planning permission for the site and all other consents whether statutory or otherwise.

3. Evidence that the applicant has complied with or is in a position to comply with all material conditions attaching to any such planning permission.

4. Evidence of ownership of the site or a leasehold interest for a term of not less than the duration of a PPA together with a binding agreement to enable access to the site (if applicable).

5. Evidence of good standing with the Revenue Commissioners for tax purposes.

6. (copy) Letters in the form of Annex 1 to the Notes as issued.

7. Ordnance Survey maps showing the site and the connection point to the electricity network.

8. Evidence of how the question of access to the fuel source over the life of the contract in the case of projects in the biomass category will be addressed.

(b) Others

9. Return this document endorsed at clause 11 of the notes and completed in section II under sealed cover marked "AER V application".

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