



Renewable Energy Policy Review

Ireland

May 2004



EREC

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1. General information

Population and geography

Ireland is an island on the western fringe of Europe between latitude 51 1/2 and 55 1/2 degrees north, and longitude 5 1/2 to 10 1/2 degrees west. Its greatest length, from Malin Head in the north to Mizen Head in the south, is 486 km and its greatest width from east to west is approximately 275 km.

Since 1921 the island has been divided politically into two parts. The independent twenty-six county area, comprising 70,282 sq. km, has a population of 3,523,401 (1991). Northern Ireland, which is part of the United Kingdom and contains six of the nine counties of the ancient province of Ulster, has a population of 1,569,971 (1991).

(Information on the population must be added)

Dublin	952,692
Cork	179,954
Limerick	79,137
Galway	57,363
Waterford	44,155

Ireland joined the European Union in 1973 in the same time as the United Kingdom and Denmark.

The physical planning system in Ireland is run by 88 local planning authorities: 29 County Councils, 5 County Borough Corporations, 5 Borough (City) Corporations and 49 Urban District councils. This seminal piece of legislation (which one?) came into effect on the 1 October 1994 and introduced for the first time a statutory development control system. There has been a large body of planning legislation and regulations in the years since then, reflecting the expansion of the statutory development control system to meet the demands arising from economic growth, rising public concern in the area of environmental control, also, a desire on the part of the public for a statutory and independent planning appeals system, and a growing European dimension arising from membership of the European Union. Ireland is also unique among European countries in that it has an independent third party planning appeals system, which is operated by An Bord Pleanála (the Planning Appeals Board).

The Irish economy is very open. It has a domestic market of only 3.7 million people and is heavily dependent on trade. Exports of goods and services in 1999 were 96.8% of GDP. Membership of the E.U. since 1973 has allowed Ireland to significantly diversify its trade patterns and, while the United Kingdom is still Ireland's largest single trading partner, the rest of the European Union accounts for almost half of all Ireland's exports. In 2002, agricultural output at producer prices was €4,582 million with beef and milk production accounting for 56%.

The value of intermediate consumption (inputs) was €3,124 million. The agri-food sector remains an important part of the Irish economy, accounting for about 8.4% of Gross Domestic Product (GDP). A population of approximately 3.74 million offers limited possibilities for industrial expansion based on the domestic market. Moreover, a lack of resources means that large quantities of fuels, raw materials and other basic requirements need to be imported.

Ireland's emergence as Europe's high-growth economy has been a feature of the 1990's. This transformation has arisen due to many factors, in particular a young well educated labour force, a commitment to open markets and a half century of consistent policy in respect of Foreign Direct Investment. The economy has traditionally been based on agriculture and up to the 1960's the population lived largely in rural areas. Since then, the natural environment has been affected by policies to promote the establishment and expansion of modern industry, by a major enlargement of urban development, and by changed patterns of agriculture, including more intensive production. Despite increased pressures on the environment, late industrialisation and the predominance of clean modern industry have had the advantage of enabling major damage to be prevented. Ireland's location off the west coast of Europe, with high annual rainfall and prevailing south-west winds from the Atlantic, contributes to the quality of the environment.

2. Renewable Energy Policy

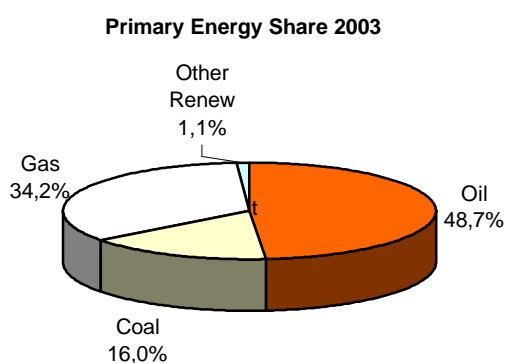
Energy and Renewable Energy country profile

More than 70% of Ireland's primary energy supplies are met by imports of coal and oil. Ireland has access to a variety of indigenous energy sources, which include coal, hydropower and wood, but the primary source has been subsidized peat mined from peat bogs. The domestic sector is a major energy consumer and is switching from coal and peat briquettes to gas as this becomes more available. The switch to gas has been accelerated by clean air legislation and the increased access to piped gas supplies.

Ireland is dependent on imported fuels for the major part of its energy supply but the policy has been to utilise native resources to the maximum in the generation of electricity. The first major development was the ambitious Shannon hydroelectric scheme in the 1920s, followed by harnessing of the Rivers Liffey, Erne, Lee and Clady in the 1940s and 1950s. There is a pumped storage plant in the Wicklow Mountains. Eleven medium to small peat-fired power stations had begun production by the early 1960s, mainly in the midlands. Electricity is also generated from Kinsale natural gas in the Cork Harbour area and in Dublin.

Country Profile

Population	3.84	Millions
Area	70,280	km ²
Total Primary Energy Supply	14.394	Mtoe
Electricity Production	24.956	TWh
Electricity Prod. by source		
Fossil Fuel	94.59	%
hydro	3.68	%
Nuclear	0.00	%
Renewables	1.34	%



Source: CIA World Factbook 2001

Source: EUROSTAT

Traditionally, **hydropower** is by far the most important **renewable electricity** source in Ireland, though in recent years production from other RES-E such as **wind** and **biogas** has been increasing. In 2002 the combined production of small-scale and large-scale hydropower stations was 912 GWh, which corresponds to 73% of the total RES-E production for that year. Electricity generation from wind has increased from 0.2 GWh in 1990 to 330 GWh in 2002. The contribution of wind power to overall electricity generation from RES in 2002 was 27%. Installed wind power capacity at the end of 2002 was 137 MW. In 2003 installed wind power capacity increased by 49 MW up to 186 MW at the end of 2003. Electricity production from biogas in the year 2002 was 81 GWh, accounting for a contribution of about 7% to the overall electricity generation from RES. Finally, it can be noted that in Ireland there is virtually no RES-E production from **solid biomass**. The **share of RES** electricity in overall electricity consumption in Ireland increased from 3.6% in 1997 up to 5.1% in 2002. (source COMMISSION STAFF WORKING DOCUMENT, The share of renewable energy in the EU Country Profiles, Overview of Renewable Energy Sources in the Enlarged European Union, {COM(2004)366 final} 2004)

Renewable energy provided 0.26Mtoe (1.7%) of Ireland's TPES and 1.38 TWh of electricity generation (5.7%) of total electricity supply in 2001. (**IEA Renewables Information page 123**).

Hydro

Hydropower generated 920 GWh of electricity in 1994 or 5.5% of electricity production. This dropped to 722 GWh and 3.8% of total electricity in 1996, due to lower precipitation. The EC has estimated that up to 75% of viable hydro resources has been already developed; the remaining 25% consisting of smaller installations in more difficult sites, although there is scope to use existing capacity more effectively. Capacity is therefore expected to grow only marginally - 9 MW - between 1994 and 2000. Only 67 MW of the current 232 MW capacity is small hydro (< 10 MW). Exploitation of small hydro sites is encouraged by the AER programme, with 3 MW expected to be commissioned from AER III, and a further 10 MW in the first decade of the next century. (**to be updated**).

Biomass

Wood accounted for all of Ireland's biomass use (109 ktoe) in 1996. All biomass is reported as being used directly, mainly in the industrial or residential sector. No biomass-generated electricity was produced in 1996, but 11.8 MW of the 12 MW biomass/waste projects successful under AER I were operational by mid-1997 (fuelled by landfill gas). The results of AER III and the biomass target outlined in the previous section should result in further capacity (probably landfill and/or other biogas) being on-line by 2000. (**to be updated**). Biomass (mainly wood and wood waste) has been used traditionally for many centuries in Ireland and recent increases of forest cover should contribute to enhancing the current capacity.

Wind

Ireland's first demonstration wind farm in Bellacorrick was completed in 1992, with an installed capacity of 6.45 MW which generated 18 GWh in 1994. Total wind generation in 1996 was 1.2 ktoe. A further 73 MW bid successfully under AER I, although problems in the planning process means that not all of this will be commissioned. A further 137 MW submitted successful bids under AER III. By February 1998, Ireland's wind capacity stood at 36.15 MW, with approximately another 10 MW from AER I still to be completed. However, the interest in wind projects has exceeded government expectations, and the majority of future renewable energy development in Ireland is expected to come from wind farms - this is reflected in the renewable energy targets outlined in the previous section.

Solar

There is only one demonstration PV plant in Ireland. It has a peak power of 55.5 kW and produces about 20,000 kWh per year. The technology has never proved of commercial interest apart from minor uses in remote applications.

Geothermal

Some geothermal R&D projects were started in 1990 to utilise resources in Mallow, Co. Cork and evaluate the potential of deep boreholes in Munster and Leinster. Naturally heated ground water occurring in Dublin City Centre is used in several medium-sized buildings, and estimated to produce around 10 ktoe of useable heat. Geothermal energy use is not expected to grow by 2000.

RE Policy Outlook

Targets/Strategy/Climate change

The Minister for Public Enterprise has sole responsibility for renewable energy policy. The Renewable Energy Division of the Department of Communications, Marine and Natural Resources is responsible for implementing measures to increase the penetration of renewable energy technologies in electricity production in Ireland. An Energy Advisory Board appointed by the Minister for Energy provides advice on policy and programmes in the field of renewable energy resources, while responsibility for co-ordination and implementation of energy conservation lies with Sustainable Energy Ireland (formerly the Irish Energy Centre)

Use of RES is still very low. Traditional energy sources such as wood and mini-hydro are still used and some other sources, such as wind energy or solar thermal are slowly growing. The energy sector is regulated at national level, in a policy document "Renewable Energy: a strategy for the future" published in 1996. In September 1999, the Green Paper on Renewable Energy was formally unveiled by the Minister of State. The Green Paper adds a systematic framework to the existing legislation and indicates how Ireland plans to progress towards the Kyoto Protocol, to which it is a signatory. Since 2000 the Electricity Regulation Act has been established in Law and a Commission for Electricity regulation has been working to regulate licensing and market liberalisation. At present, the largest portion of RES come from industrial and traditional biomass, followed by large scale hydro power stations and, to a much lesser extent, by the other renewables such as wind and solar technologies.

The (i) national indicative target, (ii) the planned approach and (iii) reasoning the approach .

The national indicative target is to contribute a minimum 13.2% of green electricity to total electricity consumption by 2010. The planned approach is to intervene in the electricity generating market to the extent necessary to ensure green electricity contributes a minimum 13.2% to gross electricity consumption by 2010. The specific indicative target, the quantity of additional capacity required to deliver that target, the particular technologies employed and the detailed market interventions will be settled after a public consultation process is commenced in Q.1, 2003.

"*Renewable Energy – A Strategy for the future*" launched the national programme to promote renewable energy technologies in electricity production in the mid 1990s. It commenced "*Alternative Energy Requirement (AER) programme*". Under the AER programme the competent Government Minister announces competitions from time to time to support the building of new renewable energy based electricity generating plant

The national publication "*Green Paper on Sustainable Energy*" (1999) set a target to add an additional 500 Megawatts of new green generating plants to the electricity network by 2005. This programme was launched after the commencement of EU common rules establishing the internal electricity market. The Directive and the national target are complimentary and mutually reinforcing measures. . In addition, an annual target of 31 MW of new electricity generation capacity from renewable sources between 2000 and 2010 was set. Following the 1999 Green Paper on Sustainable Energy, this target has increased to 100 MW a year of new renewable generating capacity. Generally, renewables have experienced slow commercial development in Ireland. The current Ireland policy is to encourage smaller scale development of renewable in projects that are less intrusive and realize more local benefits. Consequently, in the last years, renewable energy has experienced a slow commercial development in Ireland. This has changed rapidly with the introduction of the Alternative Energy Requirement (AER) which invited developers to bid for premium price contracts to supply energy from CHP and renewables and obtain grant support to permit commercial operation.

Electricity

Ireland is the last EU country that uses a tendering scheme as the main instrument in supporting renewable energy. Since 1994, the development of electricity generating capacity from renewable energy has been encouraged through a series of Government supported Alternative Energy Requirement (AER) competitions. The objective of the AER is to increase the contribution of renewables in the overall electricity generating mix. The AER involves a series of tendering competitions, in which prospective generators are invited to compete, based on price per unit of electricity, for contracts to sell electricity to ESB. Successful competitors are offered ESB power purchase agreements of up to fifteen years. AER 5 was launched in 2000. Support prices range from 2.8 cents €/kWh (for wind 5MW-15MW) to 5.1 cents €/kWh (price corresponding to biomass, small hydro and CHP). This bidding system seems to be the only significant promotion scheme used in Ireland. Winning bidders were also entitled to apply for a capital grant under the ERDF Economic Infrastructure Operational Programme 1994-1999. For each competition round a quota is set for the amount of electricity to be sourced from each technology, e.g. wind, hydro, biomass/waste, over a fixed period. In this way the emerging and less profitable technologies such as biomass are not competing with the more mature technologies such as wind. Rounds 5 and 6 were held in 2003. The market for household and small industrial consumers is open only for 100% green consumers,

resulting in new market entrants that offer competitive green power contracts and investments in commercial wind parks (i.e. not funded through AER)..

The current electricity liberalisation proposals (Electricity Regulation Act, 1999) now provides for green electricity producers to supply electricity directly to electricity customers via Third Party Access to the network since February 2000. The Electricity Regulation Act, 1999 also provides for the establishment of the Commission for Electricity Regulation. The Act enables the issuing of supply licences for supply to all final customers of electricity produced from renewable, sustainable or alternative sources of energy. In effect, this permits renewable energy producers to source customers (both domestic and commercial) to purchase the electricity generated.

The establishment of a Renewable Energy Strategy Group to recommend measures to redress the many constraints in the deployment of renewable energy. The Sustainable Energy Act 2002 established Sustainable Energy Ireland (SEI) as a statutory body. Since its establishment in May 2002 it has launched an R&D programmes, contracted professional pollsters to assess public opinion of renewable energy development, commenced a high profile publicity campaign and contracted for the development of a digitalized wind resource which will also incorporate terrain data, information on the electricity grid and on planning and heritage. (source Ireland – Dept. of Communications, Marine and Natural Resources – Report on a proposed national programme to increase the gross consumption of ‘green electricity’)

Heating and cooling

Biomass heat production over the last few years has been increasing at an average rate of 8% per year. Total biomass heat production in 2001 was 145 ktoe. It can be seen that solar thermal heat and geothermal heat production is still relatively small-scale compared with biomass heat. The biofuel market is virtually non-existent in Ireland. (source COMMISSION STAFF WORKING DOCUMENT, The share of renewable energy in the EU Country Profiles, Overview of Renewable Energy Sources in the Enlarged European Union, {COM(2004)366 final} 2004)

In common with other EU states, the heat market is not as regulated as the electricity sector and currently there are few relevant incentives. The building control system is centered on the parent act, the Building Control Act, 1990, which falls into 3 principal categories. 1. Provides for the making Building Regulations -deals with issues such as building standards, workmanship, conservation of fuel and energy and access for people with disabilities. 2. Provides for making of Building Control Regulations ie. fire safety certificates and administration 3. Gives powers of enforcement and inspection.

Building Regulations 1997 sets out standards for the construction of new buildings and the extension or material alteration of existing buildings. It contains an introduction of a method of Heat Energy Rating of a dwelling - a measure of the annual energy output for the appliance or appliances which provide space and water heating for standardised room temperatures, levels of hot water use and conditions of operation. As such, it provides the best single indicator of overall thermal performance and the greatest scope for design flexibility.

The Regulations requires, as a minimum, the provision of energy efficient measures which -

- a) limit the heat loss and, where appropriate, maximise the heat gains through the fabric of the building,
- (b) control as appropriate the output of the space heating and hot water systems,
- (c) limit the heat loss from hot water storage vessels, pipes and ducts.

As of January 2003, Part L of this Regulation increases the thermal performance requirement in buildings Primary responsibility for compliance with the requirements of the Building Regulations rests with the designers, builders and owners of buildings. The role of the local building control authority is to monitor and enforce the building control system. Authorities are empowered to carry out inspections and undertake, where necessary, enforcement action in order to ensure compliance.

(source Part L Conservation of Fuel and Energy Technical Guidance Document of the Buildings Regulations 1997-2002

[http://www.environ.ie/DOEI/DOEIPol.nsf/0/b6ca96a0bf2051c180256d3a004c55de/\\$FILE/Part%20L%2097.pdf](http://www.environ.ie/DOEI/DOEIPol.nsf/0/b6ca96a0bf2051c180256d3a004c55de/$FILE/Part%20L%2097.pdf)

Transport

The Economic and Social Infrastructure Operational Programme (ESIOP), one of five Operational Programmes prepared in the framework of the National Development Plan 2000-2006. The ESIOP provides for a total infrastructural investment of €26.018 billion in six Priorities- National Roads, Public Transport, Environmental Infrastructure, Sustainable Energy, Housing and Health Facilities. The Department of Transport is the managing authority for the Programme. The following achievements form the Programmes progress in the Public Transport Priority. Progress in the delivery of the public transport improvements set out in the National Development Plan for the DTI Measure with results such as 80 new diesel railcars ordered in 2002 for use on the suburban rail network. Work on the Drogheda Diesel Railcar Depot is completed, many buses replaced.

All recent purchases of buses and trains conform to the very latest EU legislation on emissions control. The relatively new bus fleet operating in city centres has reduced emissions substantially. As the LUAS line (tram network) comes online it will further encourage a modal shift to public transport. The National Public Transport

measure has facilitated rail track extensions and bus replacements. The Rural Transport Initiative (RTI) is funded under the National Development Plan to provide funding on a pilot basis for community organisations and community partnerships to address the particular transport needs of their rural area by actively engaging in the provision of transport services.

The European Regional Development Fund (ERDF) assisted projects include DART Cars, 80 Diesel Railcars, Drogheda Railcar Depot, mainline track renewal, Athlone Bus Station and the infrastructure element of LUAS Line A (Tallaght to Abbey Street, Dublin).

(source <http://www.transport.ie/upload/general/4257-0.pdf> The Economic and Social Infrastructure Operational Programme Progress Report on Implementation til end June 2003)

(Source IEA 2003: National Budget RD&D in OECD Countries – Ireland 1980-2002, OECD, IEA)

Climate Change

Action taken in recent years for the benefit of the environment includes record levels of investment in water services, development of water catchment management strategies with associated action in relation to nutrients and phase-out of phosphate-based domestic laundry detergents, adoption of regional waste management plans, introduction of environmental levies on plastic shopping bags and landfilling operations, elimination of leaded petrol, extended bans/voluntary agreement on smoky coal and the National Development Plan.

The policy commitment to the environment is well reflected in a range of documents, including Sustainable Development: A Strategy for Ireland, Making Ireland's Development Sustainable, Waste Management: Changing Our Ways, Preventing and Recycling Waste: Delivering Change, National Climate Change Strategy, and Litter Action Plan.

One of the major challenges is to improve the standards of drinking water in rural areas and to minimize water wastage caused by network deficiencies. To meet all of these needs, almost €4.4 billion (2002 prices) has been provided for investment in water services in the NDP. Delivery of this unprecedented level of investment presents a major challenge to the Department, local authorities, and the private sector. To help meet this challenge, the Department has moved to a three-year rolling investment programme involving the use of public private partnerships and the application of the polluter pays principle.

(source Department of Environment, Heritage and Local Government <http://www.environ.ie/DOEI/DOEIPol.nsf/wvNavView/wwdEnvironment?OpenDocument&Lang=en#1>)

3. RE Highlights

Ireland — Wind energy

Ireland has few indigenous energy resources and therefore relies heavily on imported fuels. Wind exploitation offers a good opportunity for reducing fuel imports and making a significant contribution towards the country's electricity supply. Indeed, most of future renewable energy development in Ireland is expected to come from wind energy. However, some Irish developers are encountering a number of problems in obtaining planning permission for new wind farm developments. The Irish Renewable Energy Information Office provides an advice service to ensure that developers and planners receive adequate information and support to reach balanced decisions on renewable energy projects. Kilronan wind farm is one example of a wind energy development in Ireland. It was developed by the Irish company Kilronan Wind Farm Limited. The excellent wind resource in the region (County Roscommon), together with existing access roads and power lines to the nearby local coal mines, made Kilronan the ideal location for a wind farm. It was built in 1997 and comprises 10 turbines, each of 0.5 MW. In 1998, the wind farm generated 14 GWh of electricity.

Success factors:

- **Political: National Sustainable Development Strategy provides a framework for renewable energy development**

Irish energy policy focuses on increasing its use of indigenous energy sources. Renewable energy can contribute towards this policy, and can also provide opportunities for rural development. In 1995 the government set a target of increasing electricity generated from renewable sources by 55 MW, from 235 MW to 290 MW. The target was achieved and extended through the 1999 White Paper on sustainable energy. This increased the target for electricity generation from renewable energy to 500 MW in the period 2000–05.

- **Legislative: The Alternative Energy Requirement (AER) provides support for renewable energy generation, through a competitive tendering mechanism**

The main support mechanism for renewable energy is the Alternative Energy Requirement (AER). This is comparable to the NFFO system in operation in the UK. It is a competitive bidding system for different renewable energy technologies. Successful developers obtain a 15-year guaranteed purchase of their power, at the project's bid price. Four AER bidding rounds have been held since 1994. Since this date, almost all new wind capacity has been achieved through AER contracts. By 1999, 10 wind farms with AER contracts were connected to the grid, totalling 63 MW, with up to 137 MW further new capacity planned.

• **Fiscal: Some fiscal support to renewables**

Limited fiscal support is available through tax relief for corporations making investments in renewable energy projects.

• **Financial: Capital grants are available for projects and for regional evaluations of wind energy resources**

Winning bidders to the AER can apply for a capital grant, supported through EU Structural Funds. A number of projects have also received support from the EU Thermie programme for demonstration projects. Through the Business Expansion Scheme companies can access cheaper finance than is typically available from commercial banks. *Ireland's exploitation of its wind resource has seen a 12-fold increase in wind energy generation in the six years since 1993 but from a low starting point.*

In 1993: 15.1 GWh In 1999: 187.0 GWh Increase 1993–99: 171.9 GWh, 1 138 %

• **Technological development**

There is little indigenous manufacturing of renewable energy equipment, and the opportunities for developing such an industry are limited to newer long-term technologies such as wave power, and in-site assessment activities. Investigations of Irish wind resources are actively supported, such as through the development of the Irish wind atlas by University College Dublin, RISOE (a Danish/United Nations Environmental Programme research institute) and others. Financial support has also been provided towards implementation of renewable energy feasibility studies.

• **Information, education and training: Government support for information on renewable energy**

The Renewable Energy Information Office (REIO) of the Irish Energy Centre was set up in 1995 to promote the use of renewable energy resources and to provide independent advice and information on financial, social, environmental and technical issues relating to renewable energy development. It also provides advice to the public on all aspects of renewable energy.

4. Websites

<u>Name</u>	<u>Description</u>	<u>Website</u>
Dept. of Communications, Marine and Natural Resources	The Renewable Energy Division is responsible for implementing measures to increase the penetration of renewable energy technologies in electricity production in Ireland	http://www.dcmnr.ie
<u>Department of Transport Ireland</u>		http://www.transport.ie/index.asp?lang=ENG
<u>Department of Agriculture and Food Ireland</u>		www.agriculture.gov.ie
<u>Department of Environment, Heritage and Local Government Ireland</u>		www.environ.ie
Sustainable Energy Ireland, (SEI) - formerly the Irish Energy Centre	Ireland's national energy authority	http://www.irish-energy.ie
Electricity Supply Board - (ESB)		http://www.esb.ie
<u>Commission for Energy regulation - CER</u>	the independent body responsible for overseeing the liberalisation of Ireland's energy sector.	http://www.cer.ie
Europa website	EU Commission website	http://europa.eu.int
European Commission – Directorate General for Transport and Energy		http://europa.eu.int/comm/energy/index_en.html
Managenergy	Information services for local and regional energy actors	www.managenergy.net