



**ENVIRONMENT
IN FOCUS
2002**

Key Environmental Indicators for Ireland

Editors

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Introduction

BACKGROUND

Environmental indicators are key statistics that summarise a particular environmental issue. Their strength is in delivering concise, scientifically credible information, that can be readily accessed by decision makers. In essence their purpose is to simplify, to quantify and to communicate. In recent years the use of environmental indicators has emerged in the international arena as a powerful tool that can assist in measuring environmental performance and progress towards sustainable development and in influencing environmental policy. However, indicators may also have limitations, as they require the availability of high quality data that are updated on a regular basis.

In 1999, the EPA published the first national environmental indicators report for Ireland, entitled *Environment in Focus*. The report provided, for the first time, an assessment and synopsis on the environment in Ireland through the use of key environmental indicators. It presented an overall summary of environmental quality in the State and highlighted the main environmental problems and issues that needed to be addressed at a national level. Sector-based environmental indicator reports were prepared by the EPA for the transport sector in 2000 and for the rural environment in 2001.

This present report, *Environment in Focus 2002*, is the second national environmental indicator report for Ireland. Its main objectives are as follows:

- to help inform policy makers, both in the environmental field and across the key economic sectors, of the main environmental challenges to be addressed;
- to assist in evaluating the impact on the environment of existing national policies and measures;
- to assess Ireland's progress in meeting certain international obligations; and
- to help guide further environmental policy development where needed.

At the international level most countries in the EU have developed and published indicator-based reports on the environment or on sustainable development in general. International organisations such as the European Environment Agency (EEA) and the Organisation for Economic Co-operation and Development (OECD) publish regular environmental indicator reports as well as sector-based indicator reports – most notably in relation to the transport sector. The European Commission has also promoted the use of environmental indicators and has developed a small set of key 'headline' environmental indicators, which are focused on measuring the progress and effectiveness of the EU's main environmental policy areas.

CONTENT AND FRAMEWORK

In 2000, the EPA published its State of the Environment Report *Ireland's Environment: A Millennium Report*. This assessment reviewed how Ireland's record economic growth has given rise to accelerated pressures on the environment and it identified a number of environmental challenges facing Ireland as a result. The five main challenges identified were:

- reducing pollution of inland waters;
- managing waste and preventing litter;
- protecting the urban environment, particularly from transport impacts;
- controlling greenhouse gas emissions; and
- protecting natural resources.

The millennium assessment also confirmed that what may have been regarded as the 'traditional' concerns, relating to industrial and sewage discharges, are coming under control and being dealt with through national and EU measures. The main concern now is in relation to the effects of other sectors, in particular transport and agriculture.

The selection of the 50 indicators for *Environment in Focus 2002* has centred around evaluating Ireland's progress in meeting these five key environmental challenges and assessing the effects on the environment of the main strategic economic sectors. Measuring Ireland's progress in meeting its international environmental obligations has also been an important influence.

This report is structured around the internationally recognised Driving force – Pressure – State – Impact – Response (DPSIR) framework. This framework is based on the concept of cause and effect and reflects the interaction between the socio-economic and environmental systems. The report is divided into four parts. The first three follow the general causal chain: (i) from developments in society and the economy, (ii) through to the environmental pressures which can derive from them and (iii) the effects that these pressures have on the state of the environment and the resulting impacts on human health and biodiversity. The final part is focused on the responses designed to curtail environmental pressures and to minimise impacts on the environment.

Summary of Main Findings

WATER QUALITY

In Ireland, one of the most serious environmental pollution problems is the over-enrichment of surface waters by the nutrients phosphorus and, to a lesser extent, nitrates. This pollution poses a threat to Ireland's game fish population and has resulted from excessive inputs of these nutrients from a number of sources. However, estimates indicate that agriculture is responsible for the largest inputs of phosphorus and nitrates to waters. While the most recent assessment of river water quality in Ireland shows an improvement in water quality for the first time since surveys began, over 30 per cent of river channel is still considered to be polluted to some extent. It is notable that the observed improvements have mainly occurred in catchments that have had intensive management programmes implemented in the past three to five years. To minimise water pollution from agricultural sources there is a need to promote better farmyard management, to reduce the over-application of fertilisers and to implement nutrient management planning on a broad scale.

In relation to groundwater quality, many areas in the country show an unacceptably high level of bacteriological contamination. Groundwaters in counties Carlow, Cork, Kerry, Louth and Waterford have been identified by a panel of experts as being polluted or susceptible to pollution by nitrates from agricultural sources. In 2001 an assessment (in the context of the nitrates and the urban waste water treatment Directives) was made of the trophic status of estuaries and bays in Ireland based on survey data gathered over a five-year period. On the basis of this assessment, thirteen sections of tidal waters in Ireland were considered to be eutrophic and four others were considered to be potentially eutrophic. In response to these developments, thirty new water bodies have been designated as "sensitive areas" requiring nutrient removal in relation to discharges from large urban wastewater facilities and proposals are being developed to strengthen the application of good agricultural practice in all areas. Bathing water quality continues to be of a high standard and compares favourably at EU level.

The recent EU water framework Directive provides for a more integrated approach to controlling water pollution. Its full implementation will be a major policy challenge for Ireland, but should ultimately lead to significantly improved water quality and water management across the State.

WASTE MANAGEMENT

Waste remains one of the most difficult areas of modern environmental management. Despite increasing widespread awareness and concern around the waste issue, almost 2.3 million tonnes of household and commercial waste were generated in Ireland in 2000. This represents an increase of over sixty per cent in five years and it is now estimated that almost 600 kg of waste is produced by each person in the State every year.

Irish waste management practice is still heavily reliant on landfill as a means of disposal. Currently 87.8 per cent of the household and commercial waste stream is disposed to landfill with the remaining 12.2 per cent recycled. While

the recycling rates have improved in recent years, they are a considerable distance away from the Government's target of 35 per cent.

Ireland is rapidly reaching a crisis situation in relation to waste management and it is clear that the present approach is not sustainable given the quantities of waste being produced and the dwindling landfill capacity in the country. The introduction of the environmental levy on plastic bags has been a step in the right direction. Waste prevention and minimisation are essential but there is also an urgent need for a modern integrated waste management infrastructure to cater for the needs of a 21st century society.

AIR POLLUTION AND CLIMATE CHANGE

One of the main global concerns is climate change resulting from the emission of greenhouse gases. Under its international obligations, Ireland is committed to limiting its greenhouse gas emissions to 13 per cent above 1990 levels. This is to be achieved by the 2008-2012 period. However, by 2000 Ireland's greenhouse gas emissions had already increased by 24 per cent above the 1990 levels and Ireland is now in a position whereby, rather than restricting increases in emissions, it is necessary to achieve reductions. If Ireland's international commitments are to be met, it is imperative that the National Climate Change Strategy, published in 2000, is fully implemented.

In relation to other emissions to air in Ireland, between 1990 and 2000 emissions of sulphur dioxide decreased by 29 per cent and emissions of nitrogen oxides, while fluctuating somewhat, increased by six per cent over the period. Ireland will need to make substantial reductions in the emissions of both these pollutants if it is to meet its international obligations by the deadline of 2010.

Smoke levels in many urban centres around Ireland have decreased dramatically following the introduction of a ban on smokey coal in those areas. This is a welcome development and illustrates how a well-targeted policy can bring about significant environmental improvement.

URBAN ENVIRONMENT AND TRANSPORT

Ireland has progressively become a more urbanised society. This trend of urbanisation, along with an expanding population and a trend towards smaller household sizes is creating a greater concentration of demands on the physical infrastructure and creating higher pressures on the quality of these environments. Land is under pressure in Ireland as a result of urban sprawl, housing construction and associated transport infrastructure. There is a need to ensure that development is sustainable and is balanced across the country. In this regard the National Spatial Strategy, currently under development, will be an important tool, provided it sufficiently incorporates and addresses environmental considerations.

The total number of vehicles in Ireland increased by 60 per cent between 1990 and 2000. Private cars accounted for the major part of this increase, which is a direct result of the dramatic economic growth experienced in the country during that period. Recent surveys have shown that over 60 per cent of persons in employment travel to work in a car. Rising vehicle numbers and increased use of cars have caused significant traffic congestion and noise in urban areas. Road traffic is now the greatest threat to urban air quality in Ireland. Positive advances made by improved emission control technology in limiting airborne pollutants have been partially offset by the continued growth in the number of vehicles. As Ireland approaches average EU car ownership levels, the present problems are expected to intensify.

There is a need to bring about a shift in transport use from the private vehicle to public transport in particular. An integrated, efficient public transport system is urgently required. Infrastructure to divert heavy vehicles away from city and town centres is also essential.

NATURE AND BIODIVERSITY

Ireland's natural resources are coming under increasing pressure. Ireland's peatlands are a unique and finite resource. They once covered over 17 per cent of the land area of the State but now about one fifth of that original peatland remains in a relatively untouched condition. Recent surveys of Irish birds have identified 18 species that have been in rapid decline over the last 25 years. A further 76 bird species have undergone less severe declines but are still under threat. A decline in bird numbers is generally an indication that increasing pressures are being placed on their

habitats. The most significant trend emerging is that intensification of farming practices has greatly influenced bird populations. 13 of the 18 species that have been in rapid decline are dependent on farmland habitats for their survival.

The Rural Environmental Protection Scheme is the main agri-environmental incentive scheme in Ireland and provides financial incentives to farmers to engage in environmentally sensitive farming practices. While over one million hectares of utilisable agricultural land are being farmed under REPS, the large-scale intensive farming activities, which potentially have the greatest impact on the environment, are significantly under represented in the scheme.

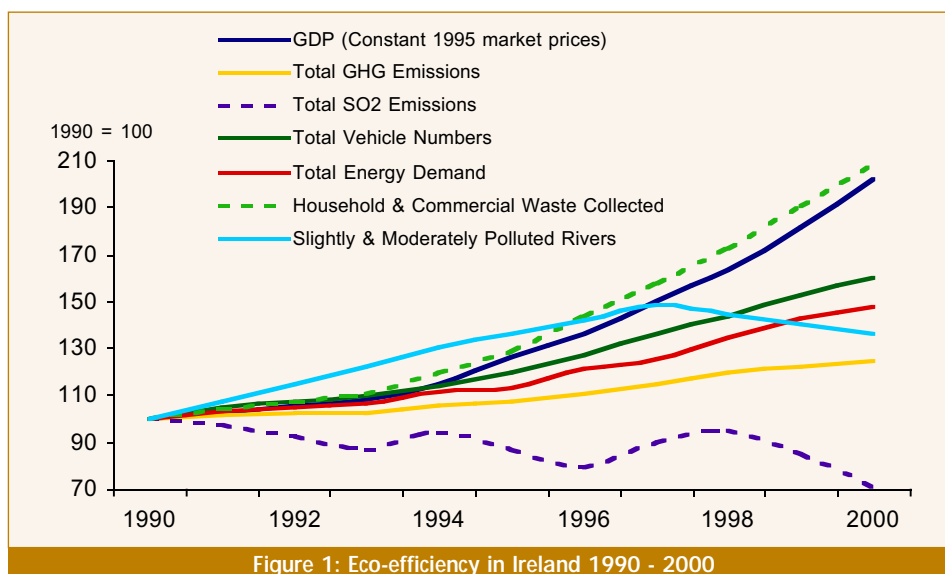
While progress has been made in designating areas for conservation and protection that are important in the national and European context, little attention has been given to sites outside these main areas. While often small, these sites constitute an important part of Ireland's natural heritage and can potentially act as essential corridors or stepping stones for wildlife between the main areas.

ECO-EFFICIENCY

The relationship between the environment and economic growth is not straightforward. Pressures on the environment can increase with economic activity, but alternatively cleaner and more efficient methods of production can reduce both the pressures and the use of natural resources. There is a need for increased eco-efficiency and to balance economic development with the environment. Eco-efficiency aims at breaking the link (decoupling) between economic growth and environmental degradation and use of natural resources. The indicators of eco-efficiency represent the use of nature in society and the economy. Estimating eco-efficiency on a national scale is a useful tool in assessing overall progress towards sustainable development.

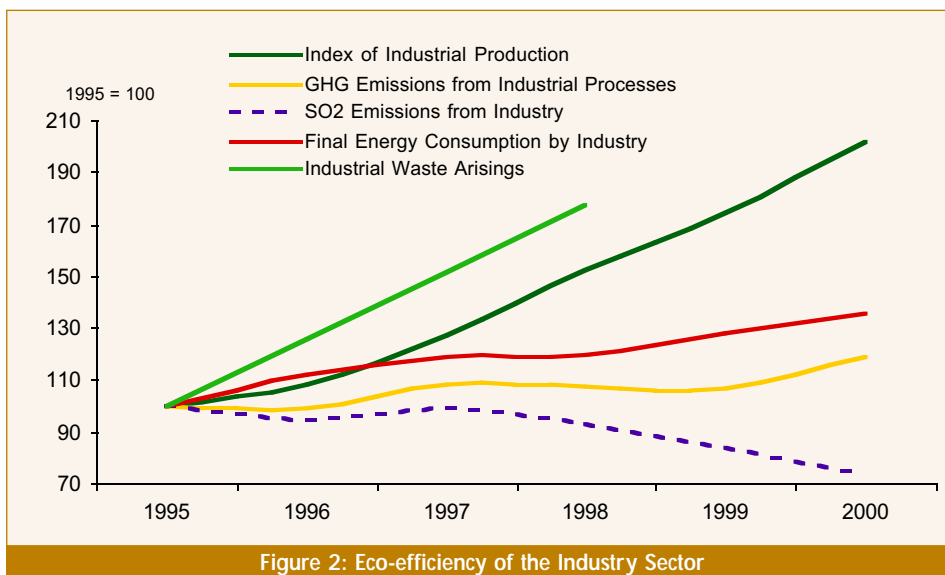
Fig. 1 below provides an assessment of eco-efficiency for Ireland. Trends in a selection of key indicators are compared with the economic trend by relating a number of key pressure indicators to economic growth (GDP). The overall trend is one of pressures on the environment increasing at varying rates with increasing economic growth. This is a cause for concern. It is clear that the increases in the amounts of household and commercial waste are closely linked to economic growth and it would appear that the challenge of decoupling waste generation from economic growth is formidable. In the case of most of the other indicators the rate of increase of the environmental pressure has been slower than the rate of increase of GDP - this is termed relative de-coupling. Only in the case sulphur dioxide, where there has been an actual decrease in the amount of emissions, has there been an absolute decoupling from GDP.

This concept of eco-efficiency can also be applied to economic sectors and a brief overview of the eco-efficiency of the main economic sectors in Ireland is outlined below.



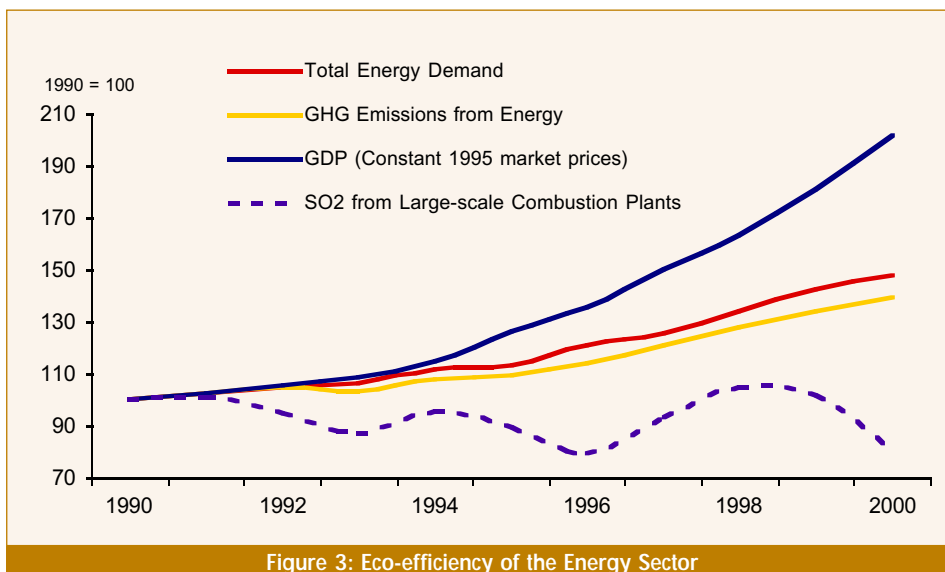
INDUSTRY

Industrial production doubled during the period 1995-2001. Increases in industrial production create demands and pressures on the environment in terms of energy consumption, emissions to air and waste generation. However there has been relative decoupling of energy consumption and greenhouse gas emissions from production. This partly reflects the impact of Integrated Pollution Control licensing of the major industries, which promotes cleaner production and more efficient use of energy and other resources. A change to sulphur free and low sulphur fuel in the industrial sector has resulted in the absolute decoupling of sulphur dioxide emissions from industrial production. While waste generation to 1998 outstripped industrial production it should be noted that in the manufacturing sector over 50 per cent of the waste generated was recovered.



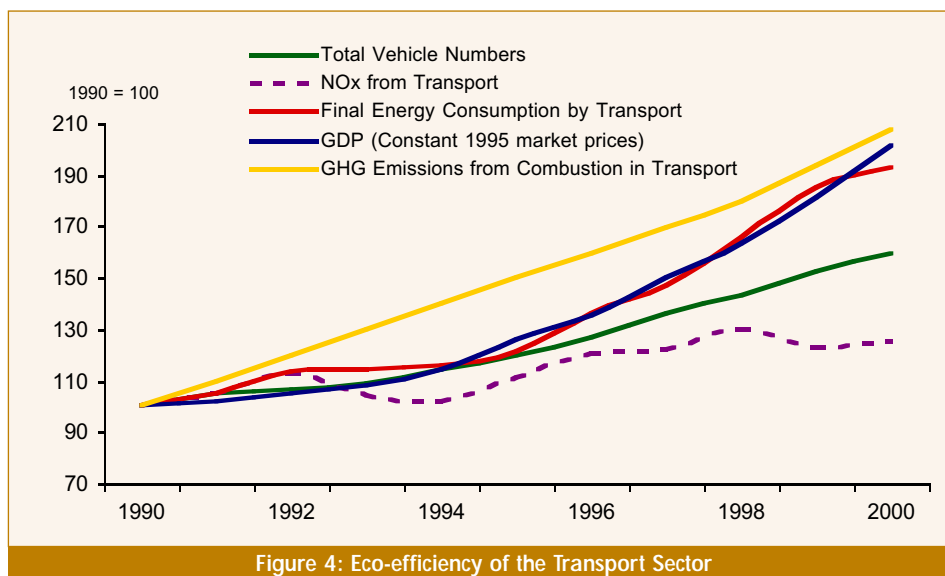
ENERGY

As the economy in Ireland has grown, energy requirements have increased to meet the new demands. However, between 1990 and 2000 the rate of growth in energy demand in Ireland was less than the rate of growth of GDP. A similar picture emerges in relation to greenhouse gas emissions from the energy sector. As a result of the switch to sulphur free and low sulphur fuels and improvements in generation efficiency in the energy sector, emissions of sulphur dioxide from large combustion plants show absolute decoupling from economic growth.



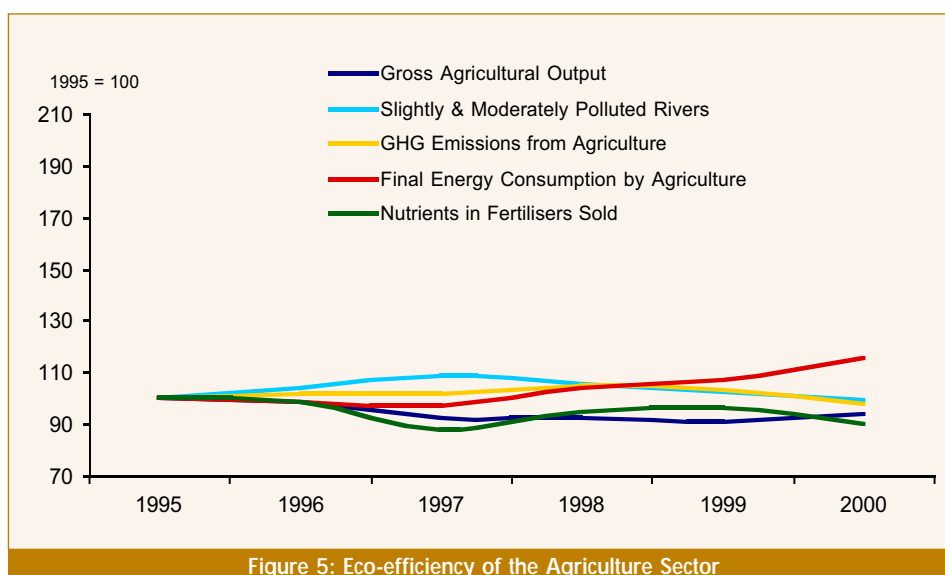
TRANSPORT

Vehicle numbers, energy use by transport and emissions of greenhouse gases and nitrogen oxides from transport have all increased between 1990 and 2000. Energy use by transport closely tracks economic growth and is one of the most important emerging environmental issues both in Ireland and across Europe. Substantial increases in greenhouse gas emissions have occurred since 1990. Vehicle numbers and emissions of nitrogen oxides have grown somewhat less rapidly than economic growth, but nonetheless constitute a growing problem in relation to local air pollution and traffic congestion.



AGRICULTURE

Agricultural activities remain a major source of pressure on the environment, particularly as the sector has become more intensified and specialised. It is the sector where the need to balance the three dimensions of sustainable development (economy, environment and society) is most evident. Gross agricultural output decreased steadily between 1995 and 1999 and increased somewhat in 2000. In the late 1990s, levels of fertiliser sales, emissions of greenhouse gases and pollution levels in rivers began to fall. Energy use in agriculture although constituting a small proportion of the overall energy consumption in Ireland rose by 16 per cent between 1995 and 2000.



RESIDENTIAL

The residential sector is an important part of the economy. It is also a significant source of pressures on the environment through its demand for resources, use of energy and generation of waste. The key factors that influence the impact of the residential sector on the environment include population growth, the number of households and household size. The residential sector is the one that shows least eco-efficiency, with waste generation and private vehicle numbers rising considerably faster than the rate of increase in population. The number of households has continued to rise sharply reflecting a general trend to smaller household size. In 2001 almost 65 per cent of the households in Ireland contained three or fewer persons.

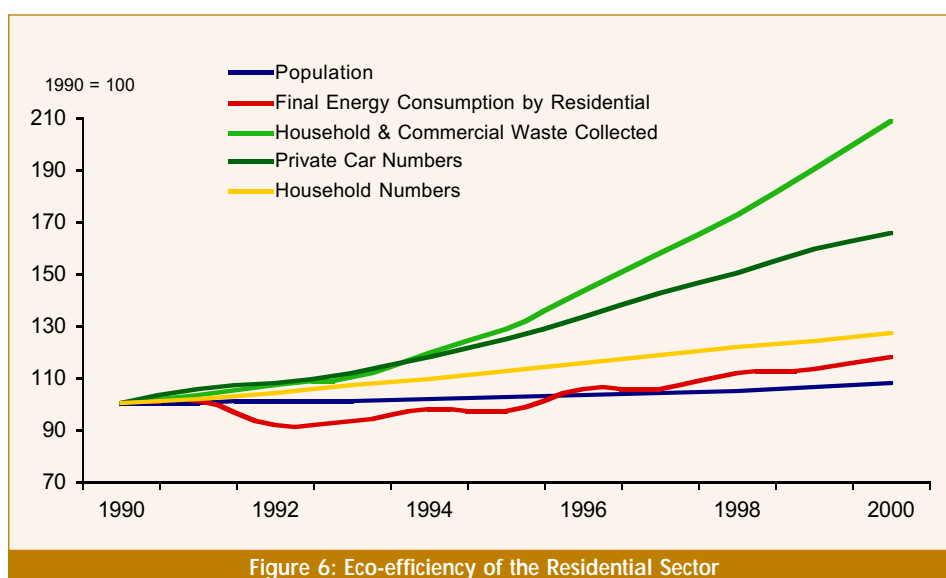


Figure 6: Eco-efficiency of the Residential Sector

CONCLUSION

Overall, while Ireland's environment is still generally of a high standard, many pressures on it are increasing at significantly faster rates than in most other European countries. These pressures have resulted generally from the rapid economic growth experienced by Ireland in recent years and in particular from growth in the transport and energy sectors. Increased urbanisation, the number of households, changing agricultural practices and increased waste generation have also significantly added to the pressures being placed on the environment. It is clear that significant challenges lie ahead for Ireland if it is to progress towards improved eco-efficiency and a more sustainable approach to development.

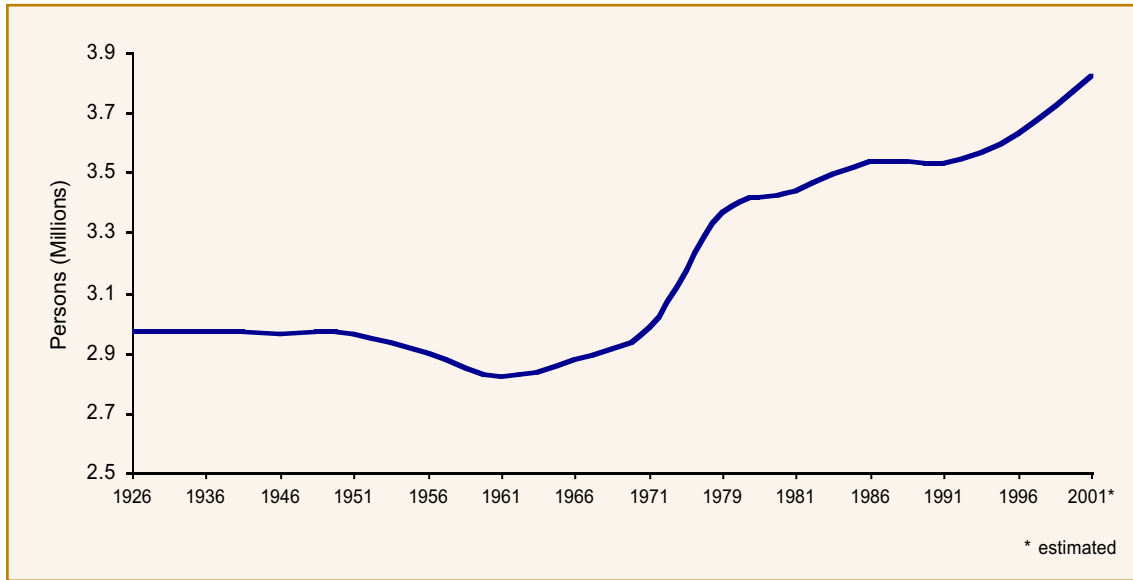
There are major challenges also for the country in meeting its international obligations, particularly in relation to limiting acidifying and greenhouse gas emissions to air and in meeting obligations in relation to water quality. Ireland urgently requires a modern waste management infrastructure and an integrated efficient public transport system to address the crisis situations both in the transport sector and in waste management. High priority needs to be given to energy conservation and efficiency and to the further development of renewable energy sources. The recent publication of the National Biodiversity Plan is an important development and its implementation will require the integration of biodiversity concerns into all relevant sectors. Overall, the environment will only be protected and conserved if there is greater awareness and commitment to action by all concerned.



Societal and Economic Developments

The quality of the environment, quality of life and economic progress are inter-linked and inter-dependent. This may be considered as a symbiotic relationship whereby the environment is on loan to society to sustain and develop its quality of life while in turn society is the caretaker of the environment for future generations. The balance between the environment and society can be altered by economic progress, changing human settlement patterns and changing lifestyles.

INDICATOR 1: POPULATION



	1926	1936	1946	1951	1956	1961	1966	1971	1979	1981	1986	1991	1996	2001*
Population (millions)	2.97	2.97	2.96	2.96	2.9	2.82	2.88	2.98	3.37	3.44	3.54	3.53	3.63	3.84

Source: CSO

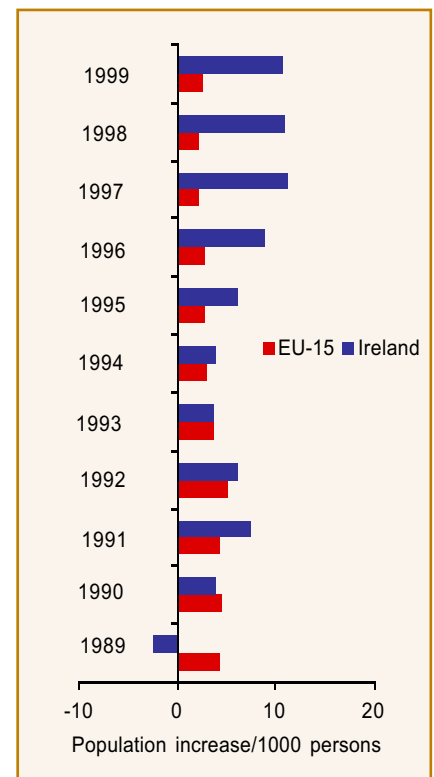
As the population of a country increases, the needs of its society expand creating increased demands and pressures on the environment.

After a long period of decline caused by high emigration, Ireland's population reached the lowest census figure on record, 2.82 million, in 1961. By 1996, however, the population had risen by almost 29 per cent, reaching 3.63 million. Continued population growth is expected and is reflected in the estimated population figures for 1997 to 2001, taken from the annual series of population and migration estimates.

The expanding population along with smaller household sizes and continued urbanisation are increasing the demand for residential housing. New housing, particularly on greenfield sites, increases the requirement for roads, sewerage and water facilities.

In 1993, the population increase in Ireland was equal to that in the 15 EU countries (EU-15), 3.9 per 1000 inhabitants. Since then, however, population growth has slowed down in the EU-15, while it has increased in Ireland. In 1960 the average growth rate for EU-15 was just under 8 per 1000 inhabitants, by 1999 it was only 2.6. In 1999, the growth rate in Ireland was 10.7 per 1000 inhabitants. In the near future, the EU population should reach equilibrium or even decline. This is not the trend in Ireland.

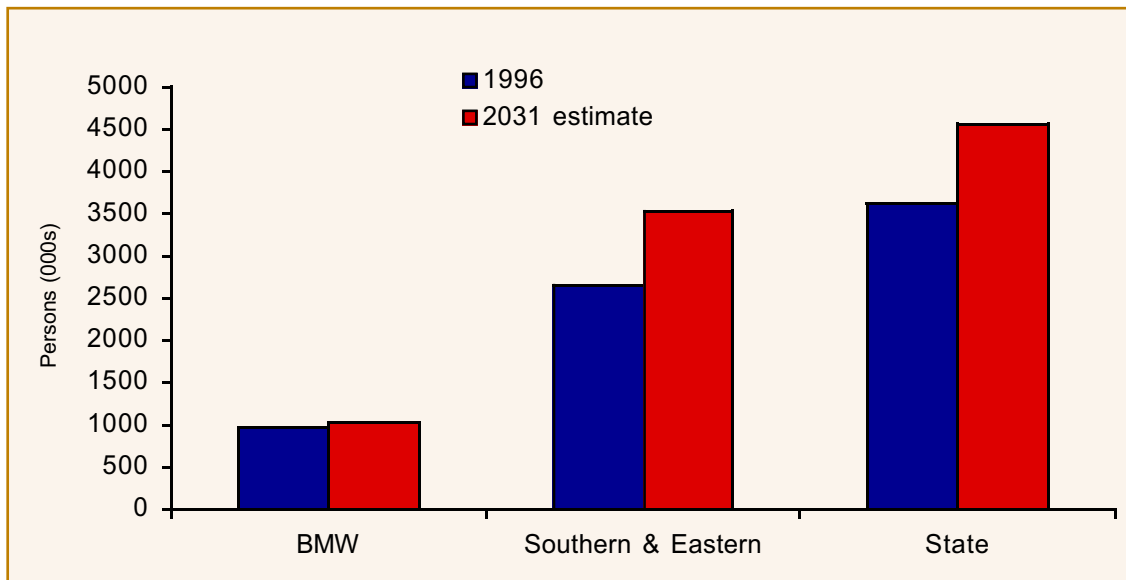
One of the main factors determining consumer demand is population size. Increased consumption patterns clearly have implications for the use of natural resources and energy and for the generation of waste and other emissions to the environment. The expanding population in Ireland highlights the need for development that is sustainable. The proposed National Spatial Strategy currently in preparation will be an important tool in this regard provided it sufficiently addresses the key environmental issues and concerns in Ireland.



Source: Eurostat

See Indicators 2, 8, 10, 14, 42

INDICATOR 2: POPULATION DISTRIBUTION



Persons (000s)	1996	2031
BMW	965.2	1040.5
Southern & Eastern	2660.9	3525.9
State	3626.1	4566.4

Source: CSO

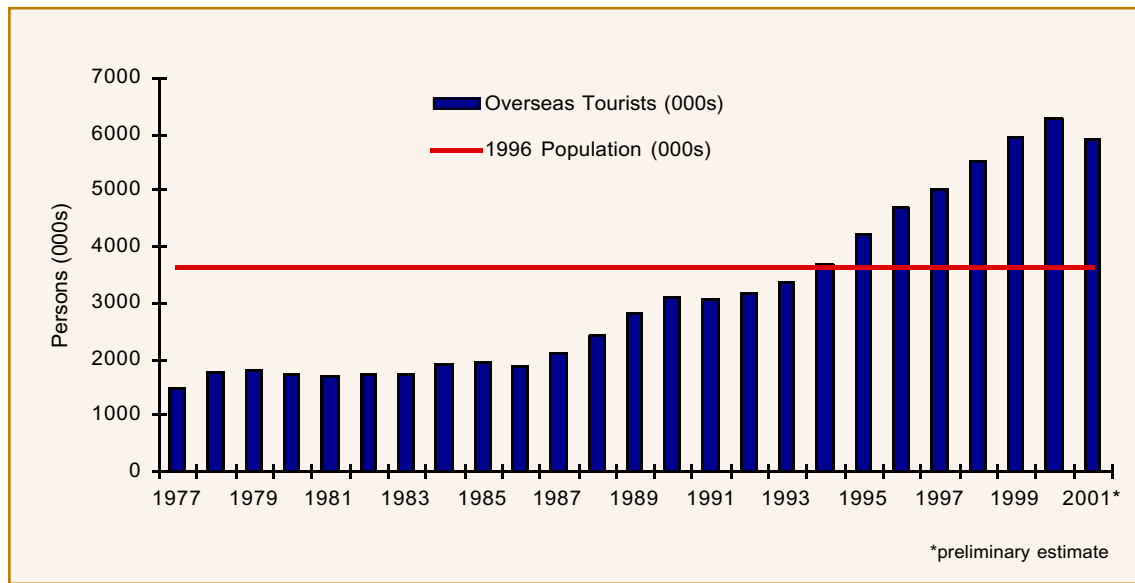
Over the course of the past century, Ireland changed from having a predominantly rural population to having a mainly urban population. This trend of increasing population share in urban areas has created a greater concentration of demands on the physical and social infrastructure and has created higher pressures on the quality of these urban environments.

In 1999 Ireland was divided into two regions, primarily in relation to the use of EU Structural Funds. While the two regions are comparable in area, there are marked differences in total population and hence the population density. The Border, Midland and Western region (BMW) comprises 27 per cent of the national population, while the Southern and Eastern region (S&E) comprises 73 per cent. Pressures on the environment are therefore distributed unevenly, with greater pressures being placed on the S&E region rather than the BMW region.

Based on a continuation of current demographic trends, the CSO estimates that the population of the BMW region will increase to approximately 1.04 million by 2031, or 23 per cent of the estimated national population. The S&E region population is estimated to increase to 3.5 million, 77 per cent of the then national population.

The proposed National Spatial Strategy, currently being prepared, has key objectives of promoting more balanced development between the two regions, identifying broad spatial development policies for areas and establishing indicative policies for the location of industrial and residential development and for rural development.

INDICATOR 3: TOURISM



	1977	1982	1987	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001*
Overseas Tourists (000s)	1468	1719	2098	3174	3348	3679	4231	4682	5007	5534	5943	6266	5931

Source: Bord Fáilte

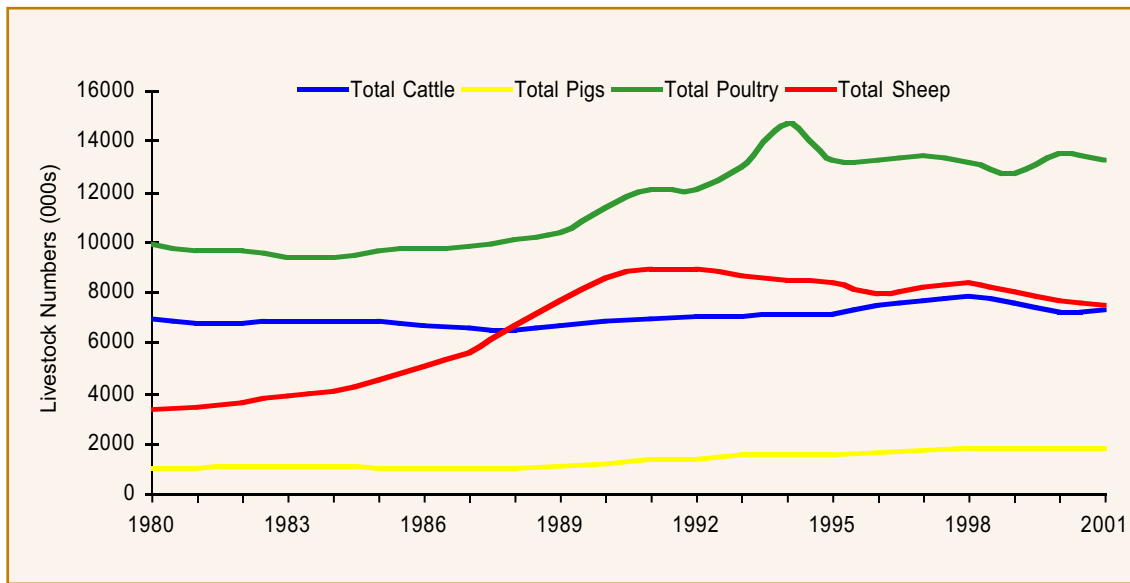
Tourism is one of Ireland's fastest growing sectors and a significant foreign currency earner, so there is a need to conserve the very environment that is a key factor in attracting the high numbers of tourists.

While the number of overseas tourists decreased slightly in 2001, the total number of overseas tourists each year since 1994 has exceeded the resident population.

The continued high tourist numbers can add to pressures on the physical infrastructure – roads, water and sewerage – in the major tourist areas. In particular, concentrations of tourists visiting the better-known sites can place increased pressures on the environment in these sensitive areas.

The challenge is to ensure that tourism is managed in a spatially balanced and sustainable manner, which minimises environmental damage while facilitating the continued development of the tourist industry. The annual visitor attitude surveys by Bord Fáilte consistently show that the quality of Ireland's scenery is one of the primary motivations for tourists to visit Ireland. Under the National Development Plan approximately €130 million has been ear-marked for projects involving development of major attractions outside the main tourist areas, special interest pursuits, and tourism/environmental management projects. The objective of this funding is to widen the spatial spread of tourism and divert pressures from highly used areas.

INDICATOR 4: LIVESTOCK NUMBERS



Livestock (000s)	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001
Total Cattle	6908.9	6819.4	6816.2	7122.1	7422.8	7659.7	7794.5	7571	7232	7264
Total Pigs	1030.5	1004	1194.4	1550.4	1620.8	1699.5	1818.6	1787	1753	1764
Total Poultry	9903.3	9582	11335.4	13248.4	13170.5	13432.6	13146.9	12697	13522	13211
Total Sheep	3291.5	4486.6	8539	8369.5	7934	8185.1	8373.4	7998	7637	7498

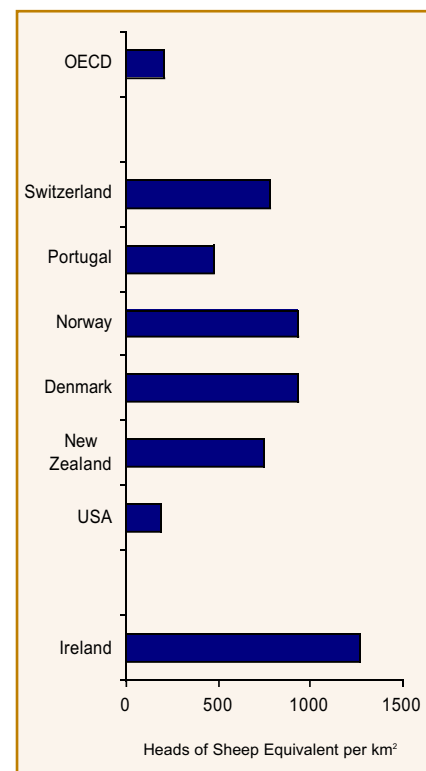
Source: CSO

The main influence on livestock numbers in Ireland is the EU Common Agricultural Policy (CAP). With increasing numbers of stock there is increasing pressure on the environment in terms of greenhouse gas emissions, agricultural waste generation, acidification, eutrophication and overgrazing.

Since 1980 there has been a significant increase in the numbers of sheep, pigs and poultry. Sheep numbers have more than doubled, although there has been a slight decrease in numbers in recent years. The OECD has estimated that livestock density in Ireland exceeds the density in many other OECD countries.

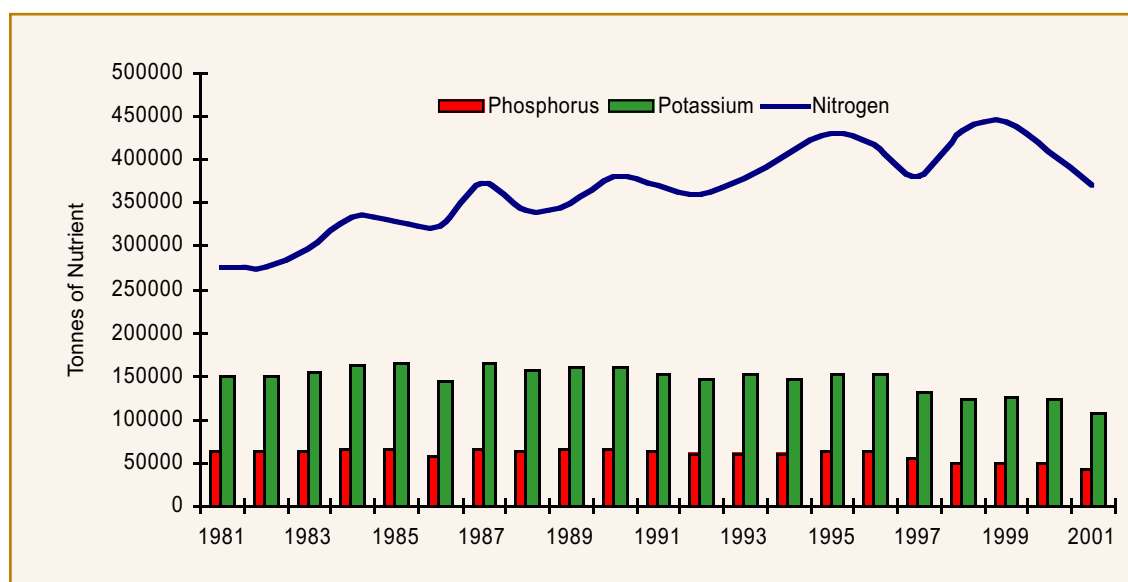
Although farming in the EU makes a small and declining contribution to GDP, the EU spends €40 billion, approximately half its annual budget, on agricultural support measures. Agricultural policies should support production and maintain the social fabric of rural areas, while protecting the environment. Reform of CAP in recent years has increased financial support for agri-environmental schemes as part of rural development programmes. In Ireland the Rural Environment Protection Scheme is the principal countrywide agri-environmental scheme.

Overall, environmentally sensitive farming practices, in particular the careful management of agricultural organic wastes (e.g., from intensive enterprises), is required to minimise adverse impacts on the environment. The National Climate Change Strategy envisages reducing methane emissions from cattle by the equivalent of a 10 per cent reduction in the projected herd size over the period.



Source: OECD

INDICATOR 5: FERTILISER SALES



Tonnes of Nutrient	1982	1986	1990	1992	1994	1996	1999	2000	2001
Nitrogen	275202	322747	379311	358302	404811	416918	442916	407598	368667
Phosphorus	61842	58083	64573	59425	59974	61945	50513	49267	42697
Potassium	148047	144690	158432	147824	145320	152124	125729	122695	106884

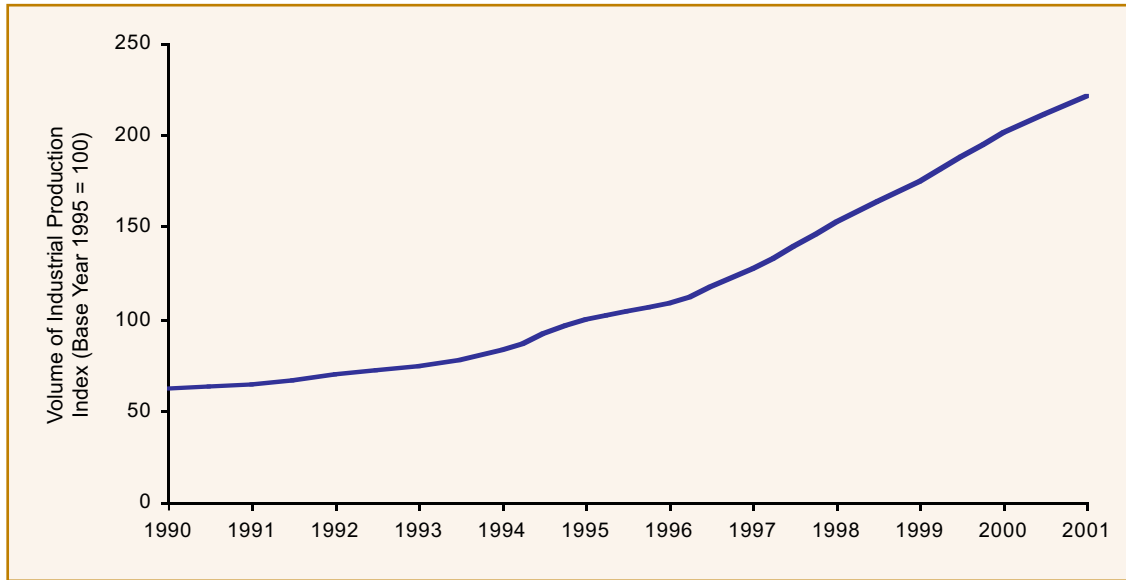
Source: CSO

Over-use of fertilisers, both natural and artificial, is one of the main causes of the levels of slight and moderate pollution observed in river water quality over the past 36 years. Excessive application of these fertilisers has led to the over-enrichment of rivers and lakes (eutrophication). Large quantities of fertilisers have been used in the past with sales of nitrogenous fertilisers, in particular, increasing up until the late 1990s. It is only in recent years that there has been a reduction in the amount of fertilisers sold in Ireland.

The primary limiting factor for eutrophication in fresh waters is phosphorus, although nitrogen is also a contributor. Nitrogen application to land can be lost to water and to the atmosphere. There is evidence to show that a large excess of phosphorus fertiliser is being applied to agricultural land in Ireland, above what is necessary for optimum crop production. On average, it is estimated that each hectare of agricultural land receives an excess of 9 kg of fertiliser each year. Many soils in Ireland now contain phosphorus at levels where losses to surface water will occur during periods of heavy rainfall.

To minimise water pollution from agricultural sources there is a need to reduce over-application of fertilisers by developing nutrient management plans, where inputs are balanced against outputs, taking account of Teagasc recommendations and by practising the Code of Good Agricultural Practice. Ireland, unlike other EU Member States presently has a zero VAT rate on the purchase of fertilisers. There is a strong case for imposing a tax on fertilisers to discourage over-use. This tax could be refundable on the basis of good nutrient management planning.

INDICATOR 6: INDUSTRIAL PRODUCTION



Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Industrial Production Index	62.2	64.2	70.2	74.2	83	100	108	126.9	152.2	174.6	201.5	221.4

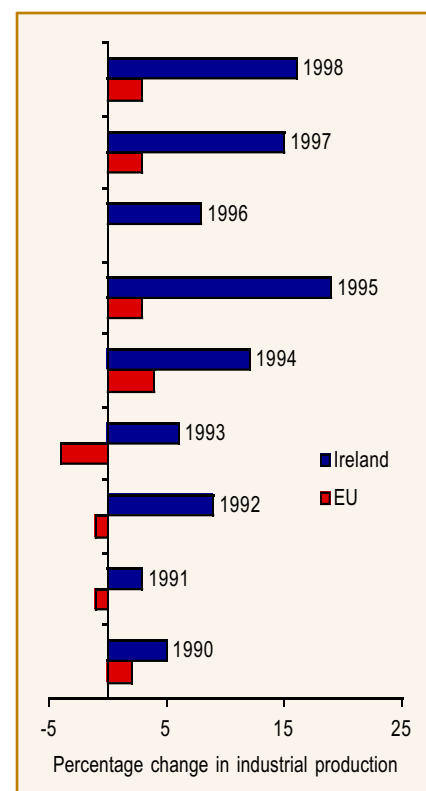
Source: CSO

Industrial production has more than doubled during the period 1995 to 2001. When compared with the EU as a whole, the percentage change in industrial production over the 1990s in Ireland far outstripped the EU average. The highest growth rates in Ireland have been in the high technology sectors such as manufacturing and engineering as well as the chemical and pharmaceutical sectors. Overseas-owned companies account for some 70 per cent of total manufacturing exports.

The increase in industrial production creates demands and pressures on the environment in terms of energy and raw material consumption, increased waste generation and the enhanced threat of pollution incidents from point source emissions. All industry and manufacturing facilities in the country with significant pollution potential is subjected to Integrated Pollution Control (IPC) licensing by the EPA. IPC licensing focuses on the elimination and reduction of waste and emissions to control the risk of environmental pollution.

The use of clean technologies and applying measures such as the Eco-Management and Audit Scheme (EMAS) can also reduce the environmental impacts of the industrial sector.

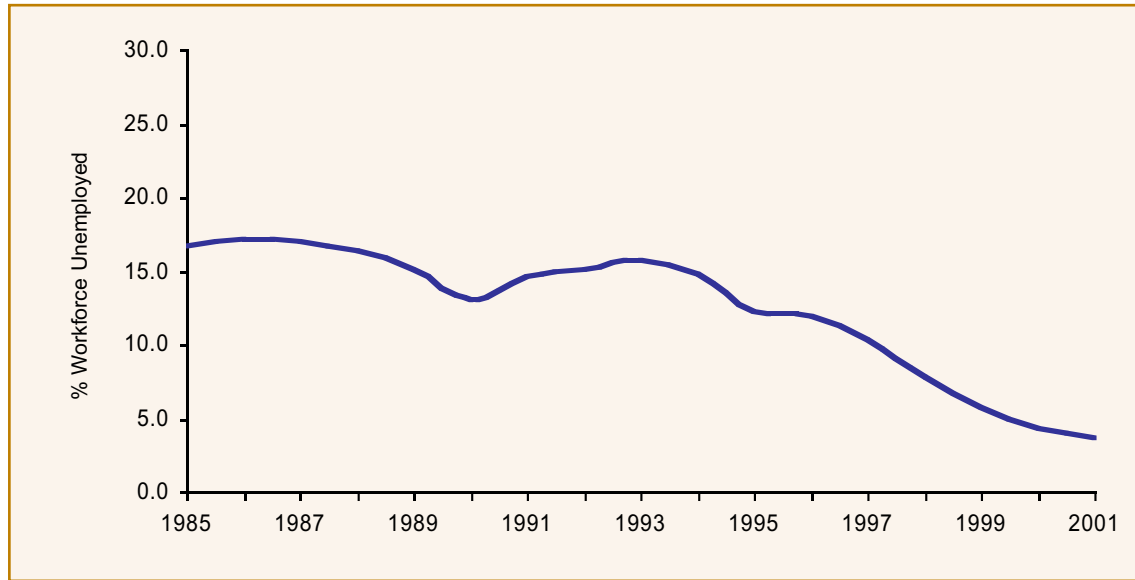
Sustainable industrial development requires the complete integration of environmental considerations into the industry sector. The requirements include increasing efficiency in the use of energy and materials, using cleaner technologies to minimise emissions to air and water, preventing or reducing waste and increasing re-use or recycling activities. Such approaches can maintain Ireland as an attractive location, both in economic and environmental terms, for indigenous and multi-national industry.



Source: Eurostat

See Indicators 7, 11, 18, 21, 39, 40

INDICATOR 7: UNEMPLOYMENT RATES

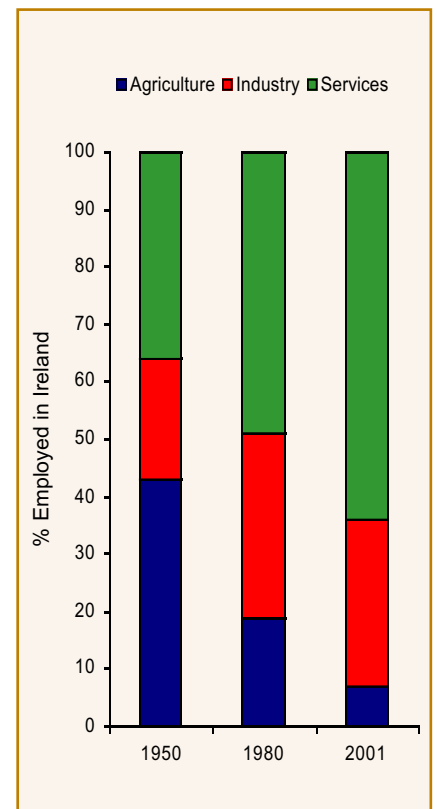


Year	1985	1990	1993	1996	1997	1998	1999	2000	2001
% unemployed	16.7	12.9	15.7	11.9	10.3	7.8	5.7	4.3	3.7

Source: CSO

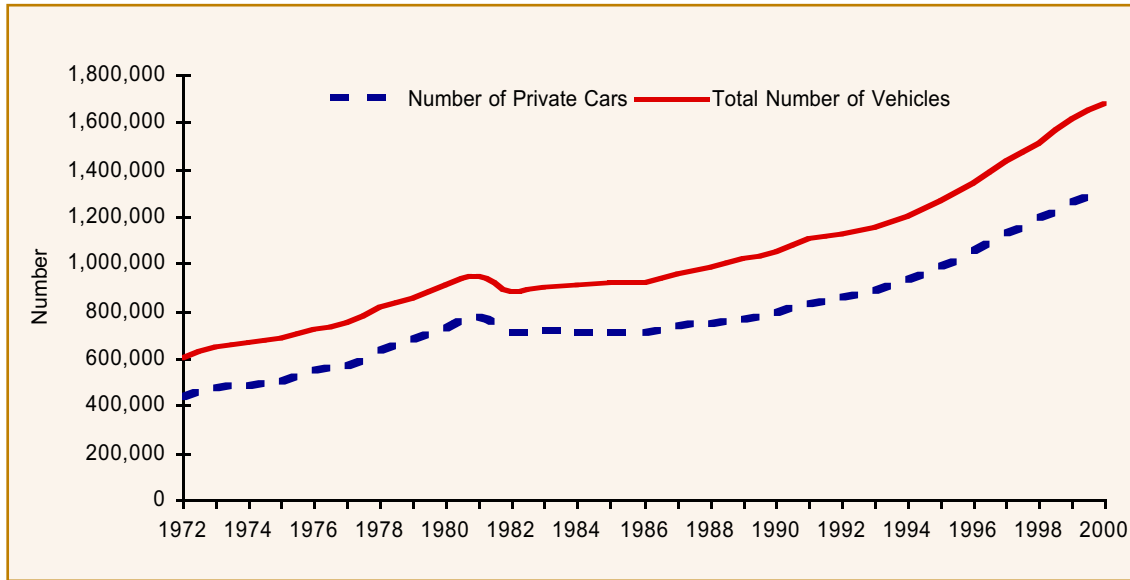
In 1985, the annual average unemployment rate in Ireland was at 16.7 per cent of the work force. The rising numbers of people employed as a result of economic growth led to a substantial fall in the unemployment rate to 3.7 per cent of the work force in 2001. Ireland's recent performance in increasing employment has been substantially better than the EU average. In addition, there has been a significant change in the composition of the Irish economy from an agriculture-based economy in the 1950s to a mainly industrial and service based economy. Employment in the service sector has increased from 36 per cent of the workforce in 1950 to 64 per cent in 2001.

Sustainable development does not conflict with job creation but requires the integration of environmental considerations into economic activities, particularly in key sectors such as industry, energy, transport, agriculture, fisheries/aquaculture and tourism. Long-term employment can co-exist with a high standard of environmental protection if such employment is underpinned by sustainable development policies throughout the productive sectors. In Ireland, many potential areas of employment growth, such as the tourism and eco-industry sectors, depend on the preservation of a high quality environment.



Source: CSO

INDICATOR 8: VEHICLE NUMBERS



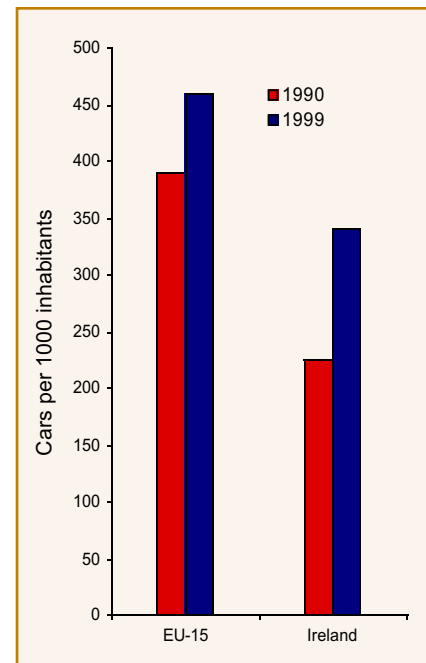
Indicator Name	1972	1977	1982	1987	1992	1997	1998	1999	2000
Number of Private Cars	440,185	572,692	709,000	736,595	858,498	1,134,429	1,196,901	1,269,245	1,319,250
Total Number of Vehicles	599,415	747,670	882,140	959,753	1,126,473	1,432,330	1,510,853	1,608,156	1,682,221

Source: DELG

Ireland's dramatic economic growth has led to increased car ownership. The total number of vehicles increased by 60 per cent between 1990 and 2000. Private cars accounted for the major part of this increase.

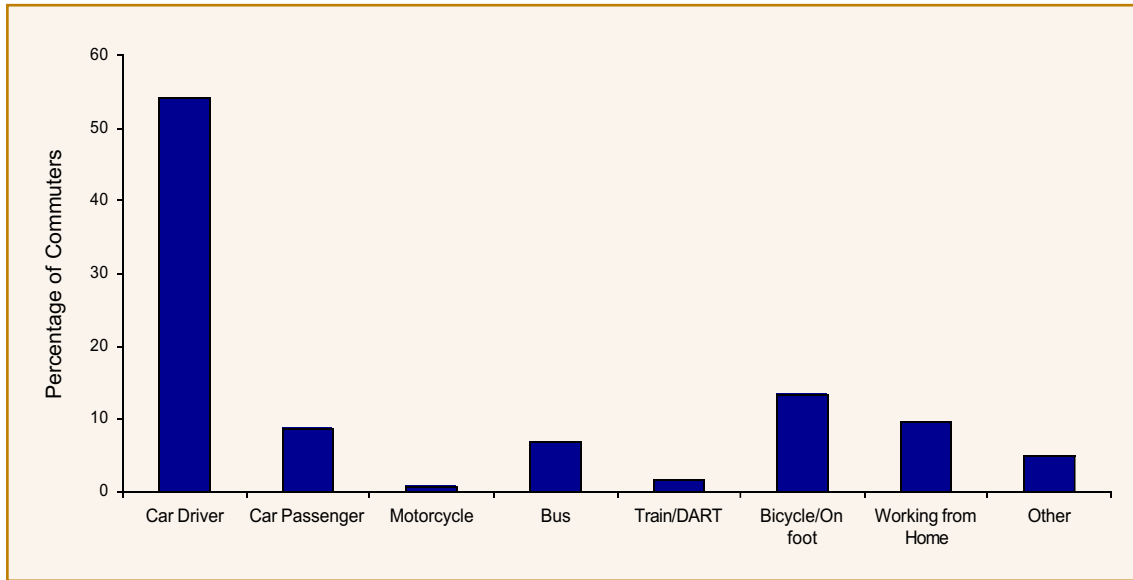
Rising vehicle numbers and increased use of cars have caused significant traffic congestion and noise in urban areas and have contributed to local air pollution. Road traffic is a major contributor to emissions of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), volatile organic compounds (VOC) and PM₁₀ (particulate matter less than 10 microns in diameter). These emissions can be damaging to human health, as well as to buildings and the natural environment.

The number of passenger cars in Europe increased by almost 30 million between 1990 and 1999. It is estimated that on average there are 460 cars per 1000 inhabitants in the EU. While Ireland has yet to reach average EU car ownership levels, the problems associated with this mode of transport are intensifying. Consequently it is expected that the sustained growth in car ownership in Ireland will give rise to even greater numbers of trips by car and to further traffic congestion, air pollution and noise. The increased energy use in transport is an important emerging issue. It is essential to break the link between car ownership and car use and to provide efficient alternative modes of transport. Measures can include increased provision for cyclists and pedestrians and improved availability of a more efficient public transport.



Source: EEA

INDICATOR 9: TRANSPORT PATTERNS



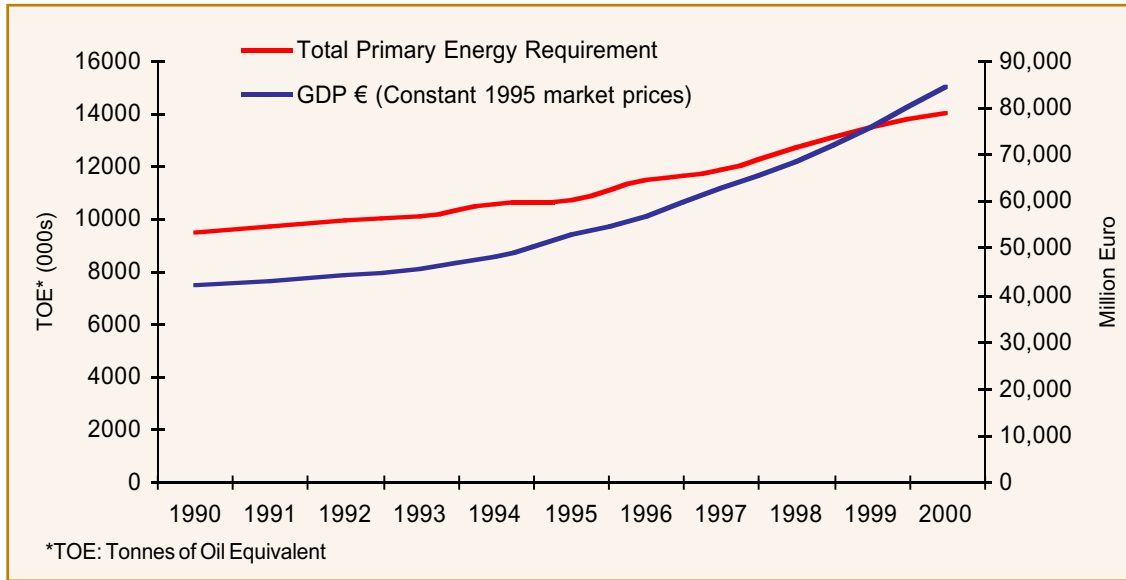
	Car Driver	Car Passenger	Motorcycle	Bus	Train/DART	Bicycle/On foot	Working from Home	Other
%	54.1	8.6	0.8	6.9	1.6	13.3	9.7	5

Source: CSO

Passenger transport in Ireland continues to be dominated by the car. Surveys in 2000 have shown that over half (54 per cent) of persons in employment drive to work, with a further 8.6 per cent travelling as a passenger. In contrast, approximately only one in five people use more environmentally sustainable forms of transport to travel to work. A total of 13.3 per cent of persons in employment walk or cycle and approximately 8.5 per cent travel by bus, train or DART.

Public transport in Ireland has been seriously neglected and poorly funded in the past. While some progress has been made in the provision of suitable cycle lanes and quality bus corridors there is major scope for improvement. Overall there is a need to bring about a shift in transport use from the private vehicle to public transport in particular. This requires the provision of alternatives to the use of private cars and the development of an efficient public transport system within and between urban centres.

INDICATOR 10: ENERGY DEMAND AND ECONOMIC GROWTH



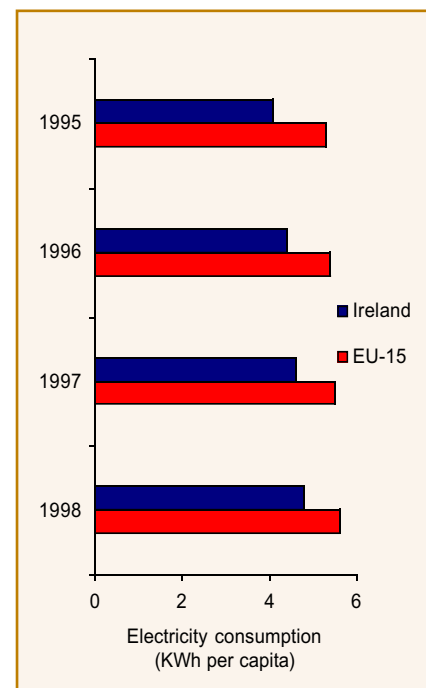
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TPER (TOE)	9466	9708	9889	10053	10522	10693	11460	11834	12673	13456	13976
GDP (Million €)	41,884	42,691	44,118	45,307	47,915	52,697	56,781	62,933	68,350	75,767	84,452

Source: DPE

As the economy has grown, energy consumption also has increased to meet the new demands. Increased energy consumption has implications for global warming through increased emissions of carbon dioxide (CO₂), the main greenhouse gas. Other issues include the depletion of non-renewable fossil fuels, and effects on air quality from emissions of other pollutants such as sulphur dioxide, nitrogen oxides and volatile organic compounds.

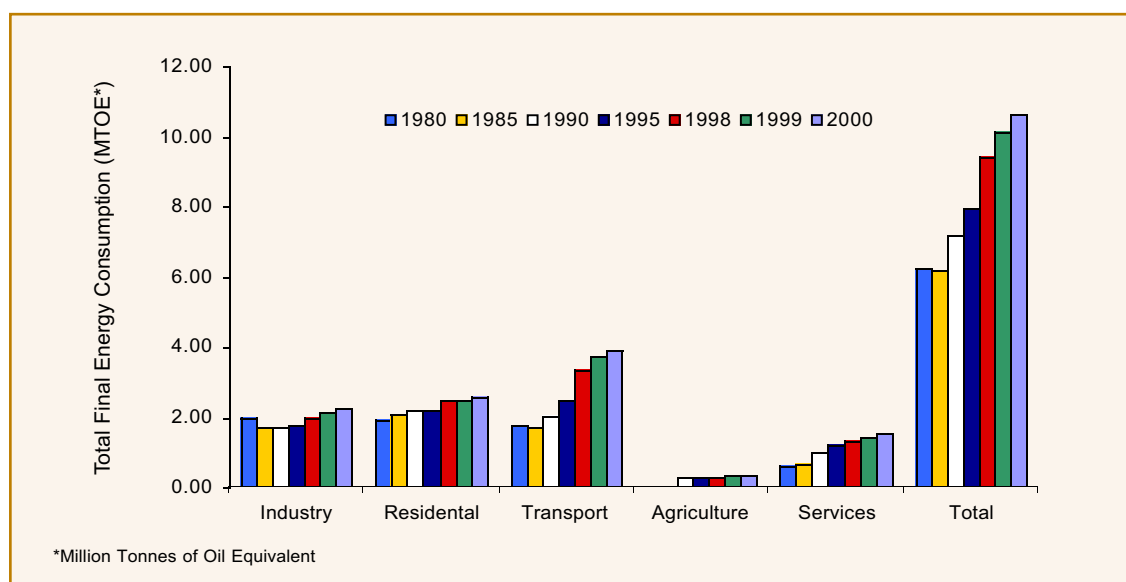
The total primary energy requirement (TPER) is a measure of all energy consumed. It includes energy consumed in transformation (for example, in electricity generation, oil refining and briquette manufacture) and in distribution. Energy is essential for development and as such, energy use is linked to GDP. However, between 1990 and 2000 growth in energy consumption in Ireland was less steep than growth in GDP. Over that period, TPER increased by 48 per cent while GDP increased by almost 102 per cent. As a result, energy intensity (TPER per unit GDP) has been decreasing in recent years.

Energy use in the EU grew relatively slowly in the early 1990s, but is now increasing more rapidly. It remains linked to GDP and remains heavily dependent on fossil fuels. Energy supply in Ireland also remains heavily reliant on fossil fuels and in particular on imported oil. The contribution of natural gas is continuing to grow and is central to Ireland's strategy for reducing emissions of carbon dioxide and sulphur dioxide. In 2000, the main sources of energy were oil (56.7%), natural gas (21.7%), coal (14.2%), peat (5.6%) and renewable energy (1.8%). The reduction and control of CO₂ emissions requires improved energy conservation and efficiency and a shift to a mix of energy sources that gives rise to lower levels of emissions.



Source: EEA

INDICATOR 11: ENERGY CONSUMPTION BY SECTOR



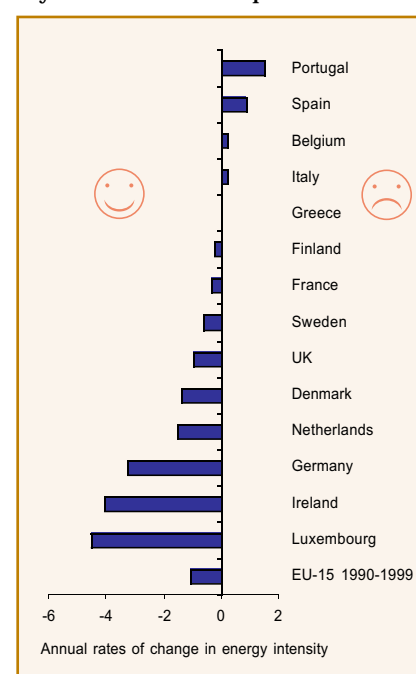
TFC (mTOE)	1980	1985	1990	1994	1995	1996	1997	1998	1999	2000
Industry	1.96	1.68	1.72	1.75	1.68	1.88	1.99	2.00	2.15	2.27
Residential	1.94	2.09	2.19	2.14	2.13	2.30	2.31	2.44	2.48	2.58
Transport	1.73	1.72	2.03	2.35	2.46	2.75	2.98	3.36	3.75	3.90
Agriculture	—	—	0.25	0.30	0.29	0.28	0.28	0.30	0.31	0.33
Services	0.60	0.68	1.01	1.26	1.23	1.26	1.27	1.34	1.42	1.53
Totals	6.23	6.17	7.02	7.08	7.79	8.47	8.83	9.44	10.11	10.61

Source: DPE

Energy is recognised as a critical sector in relation to the environment. Total Final Consumption (TFC) is a measure of the amount of final energy used by consumers. It is essentially TPER less the energy consumed in transformation and distribution. Total Final Consumption in five sectors - industry, residential, transport, agriculture and services (public plus private) - has increased over the period 1980-2000. Transport has become the fastest growing and largest user of energy in Ireland and it now accounts for more than one-third of total consumption. Consumption by industry has increased by 32 per cent in the decade since 1990 although industrial production has increased by 224 per cent, showing that some decoupling has occurred between energy consumption and industrial production.

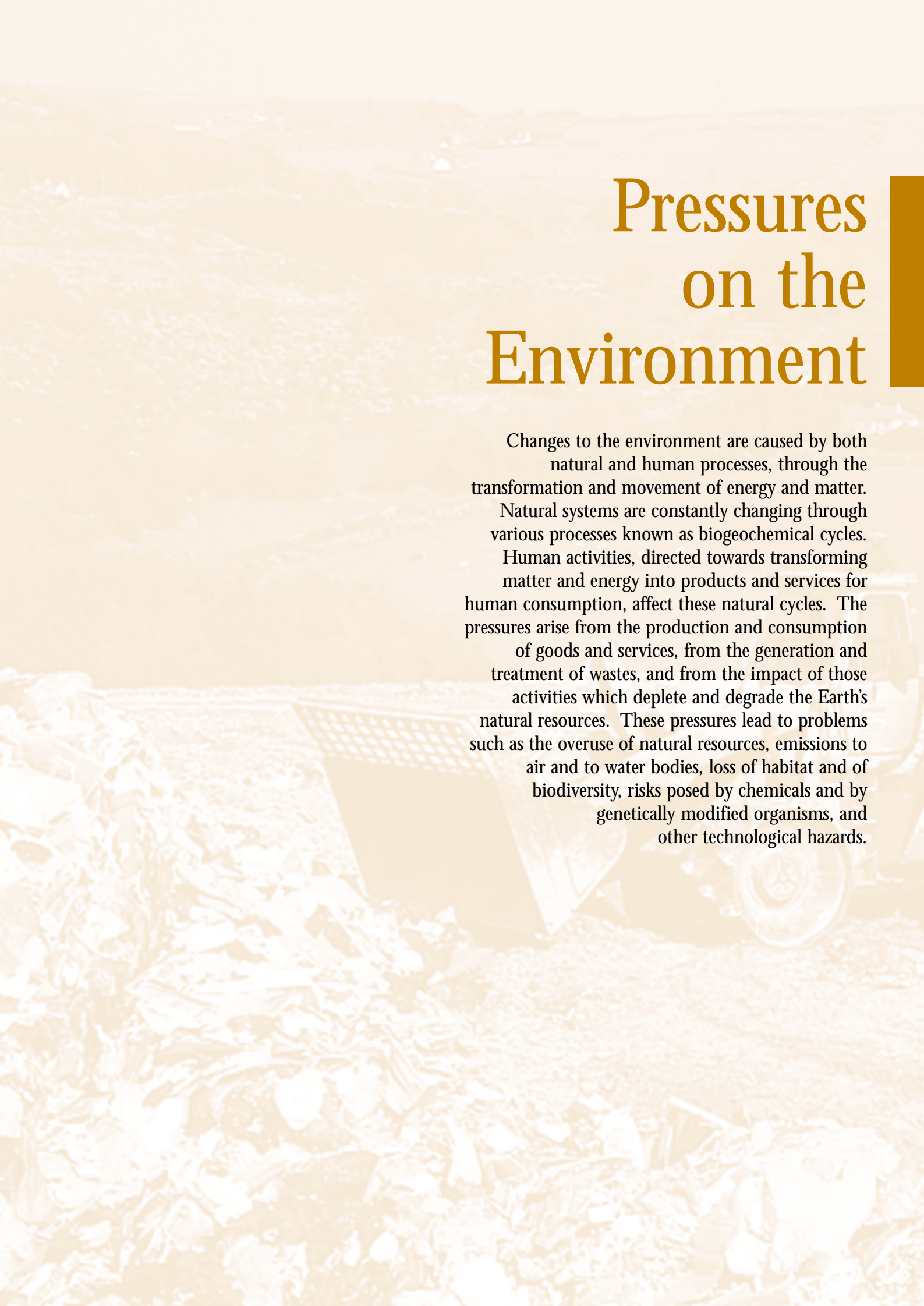
The energy intensity of the economy is a ratio between energy consumption and GDP. It indicates the energy required to produce one unit of economic output. The energy intensity of individual EU member states varied considerably over the 1990 – 1999 period. In Ireland, the average rate of economic growth far outstripped rising energy consumption, since much of the economic growth was in the low energy intensity industries and the services sector.

The EU sustainable development strategy includes specific measures to reduce emissions and to promote the use of clean energy. These measures include striving for an energy product tax Directive, the phasing out of subsidies to fossil fuel consumption, fostering alternative fuels and labelling requirements for appliances to improve energy efficiency.



Source: EEA

See Indicators 8, 10, 12, 14, 15, 16, 17, 18



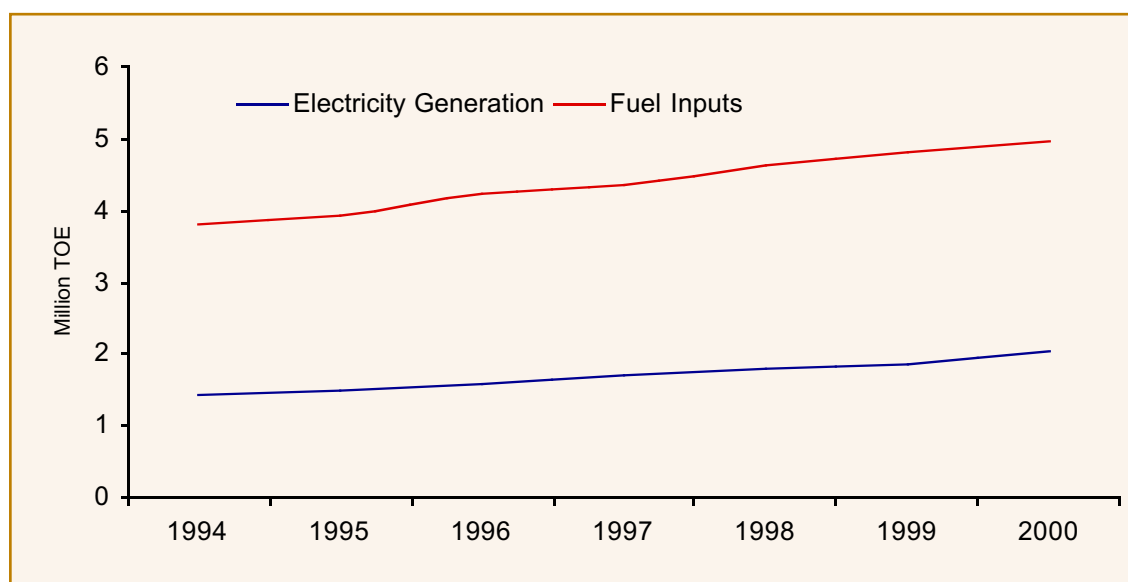
Pressures on the Environment

Changes to the environment are caused by both natural and human processes, through the transformation and movement of energy and matter.

Natural systems are constantly changing through various processes known as biogeochemical cycles.

Human activities, directed towards transforming matter and energy into products and services for human consumption, affect these natural cycles. The pressures arise from the production and consumption of goods and services, from the generation and treatment of wastes, and from the impact of those activities which deplete and degrade the Earth's natural resources. These pressures lead to problems such as the overuse of natural resources, emissions to air and to water bodies, loss of habitat and of biodiversity, risks posed by chemicals and by genetically modified organisms, and other technological hazards.

INDICATOR 12: ENERGY EFFICIENCY



TOE (Million)	1994	1995	1996	1997	1998	1999	2000
Electricity Generation	1.428	1.488	1.598	1.695	1.788	1.873	2.026
Fuel Inputs	3.814	3.929	4.227	4.36	4.633	4.825	4.961
Efficiency (%)	37.4	37.9	37.8	38.9	38.6	38.8	40.8

Source: DPE

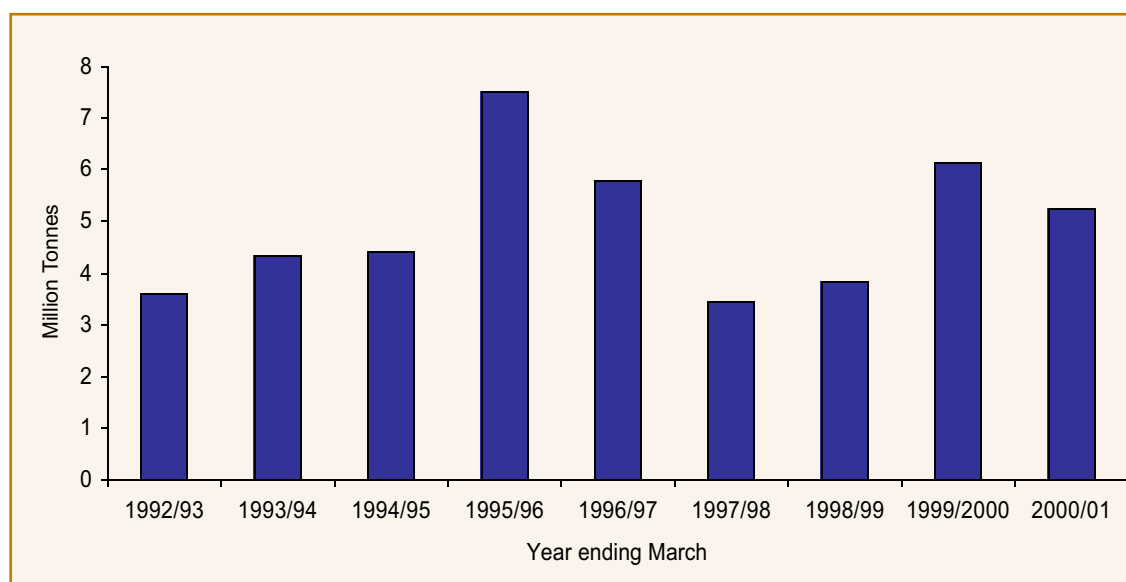
Energy is vital for development, however energy consumption is recognised as being a significant pressure on the environment as it is a large user of resources, and is the driving force behind climate change and air pollution through the emission of greenhouse gases and acidifying compounds. Overall electricity generation in Ireland has grown by in excess of 41 per cent for the period 1994-2000, an extremely high rate by international standards. Fossil fuels are still the predominant energy source at 97.7 per cent of total fuel inputs. Without policy intervention this dominance is likely to persist into the foreseeable future.

This indicator shows that in 2000 fuel inputs of almost 5 million Tonnes of Oil Equivalent (TOE) produced only 2 million TOE of electricity. In total, approximately 59 per cent of energy inputs are 'lost' during the production process. A further 14.8 per cent of electricity produced is 'lost' during the transmission and distribution stage. Overall the eco-efficiency of the electricity sector has environmental implications at each operational stage of the process.

With the current growth in electricity consumption, significant improvements in energy efficiency and growth in carbon-free sources of energy are needed to secure emission reductions and improve the sustainability of the electricity sector. Increased efficiency through the replacement of low efficiency plants with new high efficiency plants, the utilisation of Combined Heat and Power (CHP) plants and the optimisation of burners in existing plants can present significant savings to the sector and result in a reduction in emissions.

See Indicators 10, 11, 13, 15, 16, 17, 18

INDICATOR 13: PEAT EXTRACTION



Peat Extraction*	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01
Million Tonnes	3.592	4.341	4.391	7.505	5.765	3.444	3.825	6.132	5.243

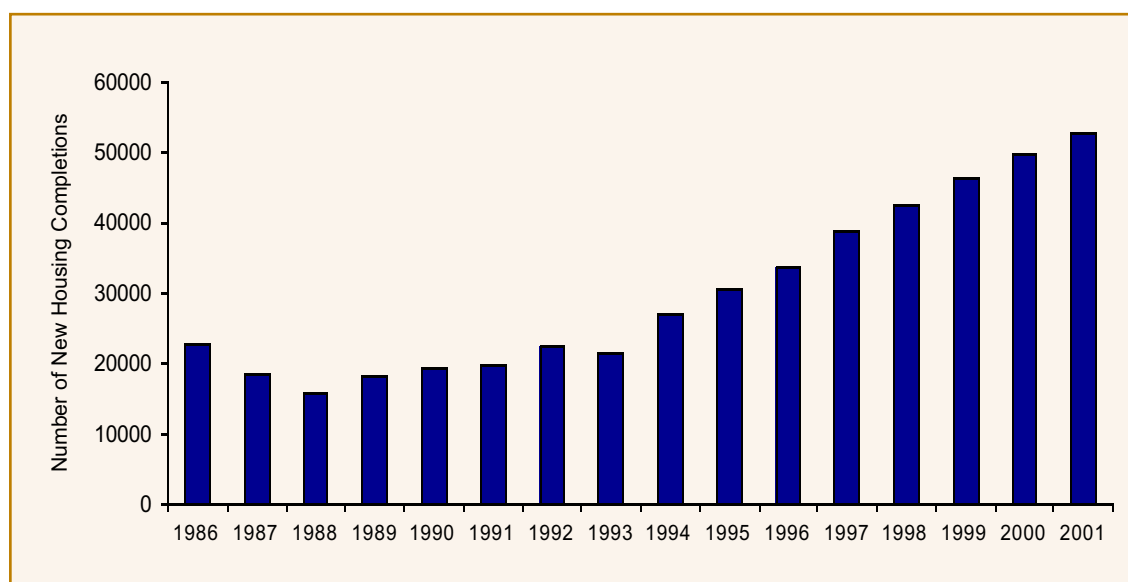
* by Bord na Móna

Ireland remains unique in Western Europe in having a wide range of bog types of international importance. Peatlands once covered over 17 per cent of the land area of the State. Now, only about one-fifth of that amount remains in a relatively untouched condition. This natural resource has been subjected to various development pressures such as large-scale extraction for fuel and horticultural peat, private extraction, afforestation programmes, intensification of agriculture and land reclamation.

In the 2000-2001 period, commercial peat extraction by Bord na Móna totalled 5.24 million tonnes. Of this, approximately three million tonnes were supplied to the Electricity Supply Board (ESB) for electricity generation in the five power stations, while approximately one million tonnes were used in the manufacture of peat briquettes. A further 1.6 million cubic metres of horticultural peat is also produced per annum. In the midlands and west of Ireland over one million tonnes of sod peat or turf are cut annually by local people for domestic heating.

Due to the variety of peatland habitats, the biological diversity of flora and fauna in these natural habitats is high. Peatland habitats are important breeding and wintering grounds for many species. Peatlands also play an essential role as an absorber of the greenhouse gas carbon dioxide (CO₂). As a non-renewable natural resource it is important that Ireland's bogs are given the protection they clearly need. In recent years some peatlands have been afforded protection through designation as special areas of conservation (SACs).

INDICATOR 14: HOUSING COMPLETIONS



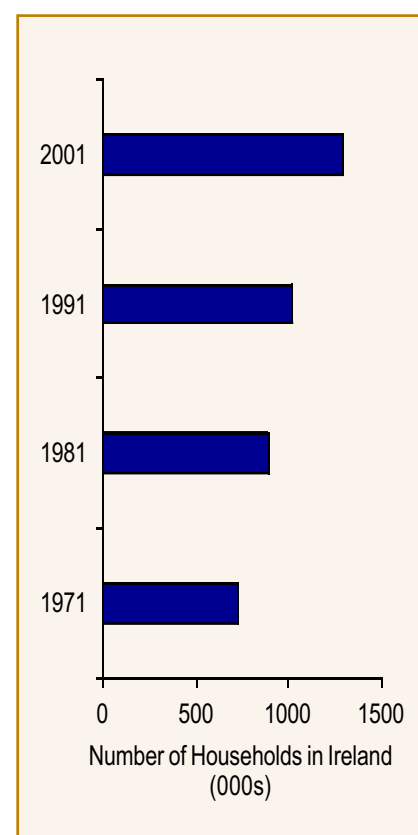
	1986	1990	1995	1996	1997	1998	1999	2000	2001
Number of New Housing Completions	22680	19539	30575	33725	38842	42349	46512	49812	52602

Source: DELG

Increasing pressure is being placed on land resources in Ireland as a result of urban sprawl, increased demands for housing, out-of-town developments such as supermarkets and leisure centres, and the consequent development of transport infrastructure. These developments are a direct result of the strong economic growth and changing demographic and social patterns in Ireland.

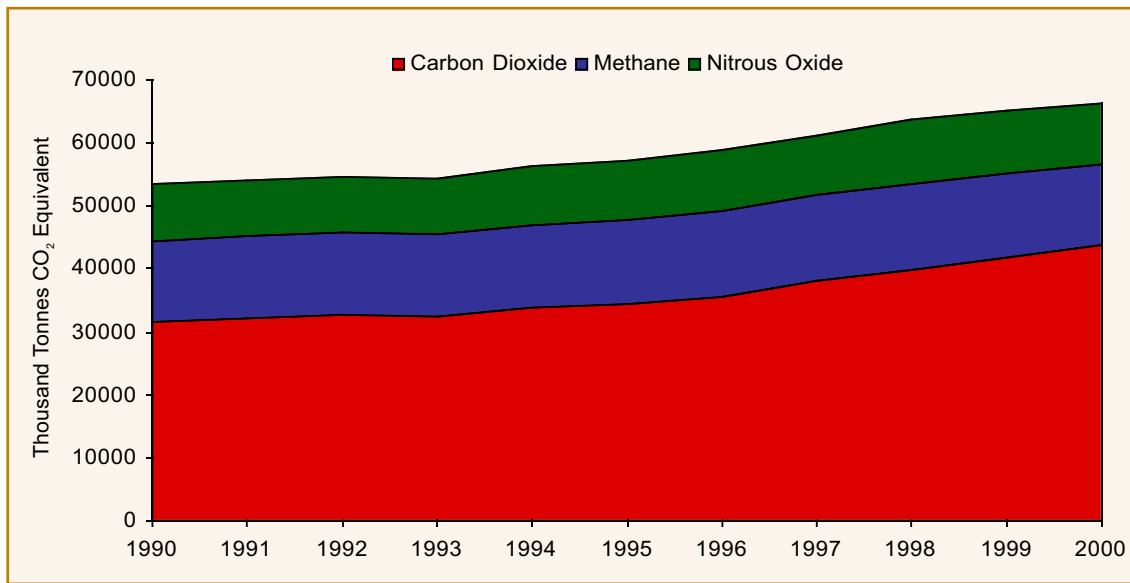
Housing construction has increased steadily since the mid-1990s to over 52,600 new housing completions in 2001. Ireland has the highest house building levels in Europe per unit of population. This reflects the general trend towards smaller household sizes and consequently increased numbers of households. In 2001 almost 65 per cent of households contained three or fewer persons.

The potential environmental impact of development depends on the type of land affected. Development in rural areas may lead to degradation of the landscape, habitat fragmentation and overall impact on biodiversity. Inappropriate single house dwellings in the rural countryside results in greater car usage, increased energy needs and greater use of small wastewater treatment plants such as septic tanks which have the potential to pollute groundwater. Development in urban environs has the potential to contribute to urban sprawl and depletion of greenfield areas around cities and towns.



Source: CSO

INDICATOR 15: GREENHOUSE GAS EMISSIONS



000 Tonnes CO ₂ Equivalent	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Carbon Dioxide	31508	32185	32821	32350	33916	34430	35629	38000	39957	41825	43815
Methane	12836	12992	13030	13099	13159	13311	13559	13747	13631	13307	12800
Nitrous Oxide	9086	8919	8860	9021	9291	9505	9660	9548	10066	10143	9657
Total	53430	54096	54712	54470	56366	57246	58847	61295	63653	65275	66272

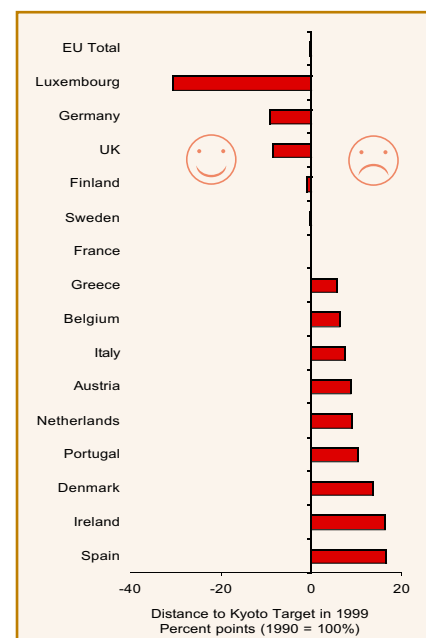
Source: EPA

One of the main global environmental concerns is climate change resulting from the emissions of greenhouse gases. Potential adverse climatic impacts caused by global warming are likely to include the drying out of peatlands, serious winter storms and flooding, lower summer flows in rivers and a rise in sea levels.

Certain gases, most notably carbon dioxide (CO₂) from the combustion of fossil fuels and methane (CH₄) and nitrous oxide (N₂O), which are mostly associated with agriculture, accumulate in the upper atmosphere where they act to enhance the natural greenhouse effect. Total combined Irish emissions of these three main greenhouse gases on a Global Warming Potential (GWP)* basis amounted to 53.4 million tonnes of CO₂-equivalent in 1990. This increased by 24 per cent to 66.3 million tonnes of CO₂-equivalent in 2000. This increase is clearly driven by CO₂ emissions but the combined CH₄ and N₂O contribution remains significant at 34 per cent of the total.

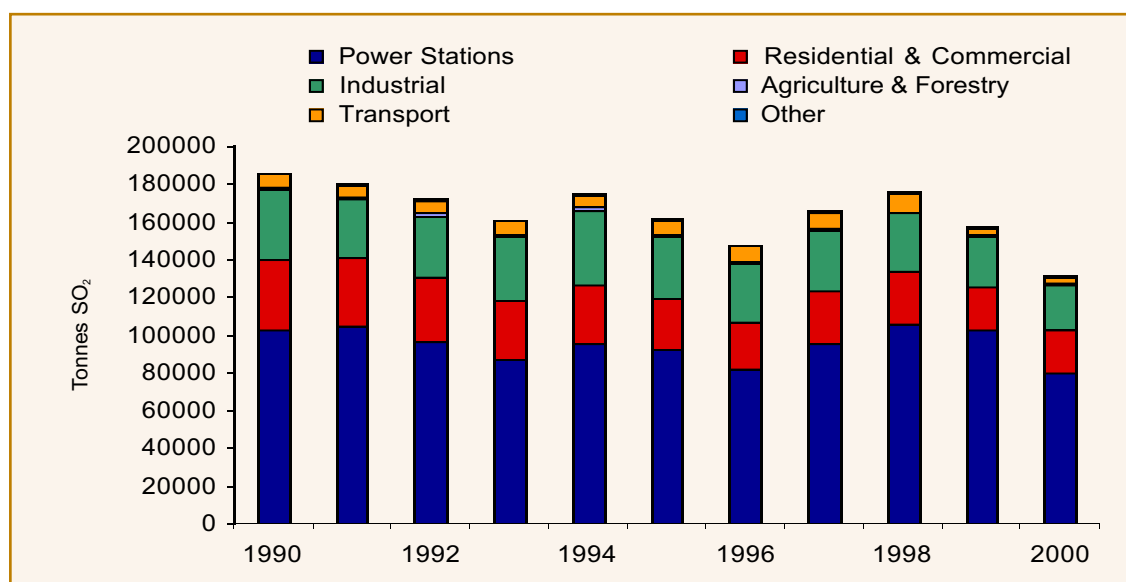
From a European perspective, total greenhouse gas emissions decreased slightly between 1990 and 1999; mainly due to the significant reductions by Germany and the UK. Under the Kyoto Protocol to the Framework Convention on Climate Change, Member States agreed to reduce greenhouse gas emissions in the EU as a whole to 8 per cent below 1990 levels in the period 2008-2012. Ireland's burden-sharing contribution is a target of 13 per cent increase above 1990 levels. Substantial reduction measures are necessary for Ireland to meet its obligations in the given timeframe. A progress report on Ireland's 2000 climate strategy, released to coincide with EU ratification of the Kyoto Protocol, sets out a range of measures being taken.

* GWP is a measure of the cumulative warming over a 100-year period, expressed relative to an absolute GWP of 1 for the reference gas CO₂. The GWP of methane is 21 and the GWP of nitrous oxide is 310.



Source: EEA

INDICATOR 16: EMISSIONS OF SULPHUR DIOXIDE

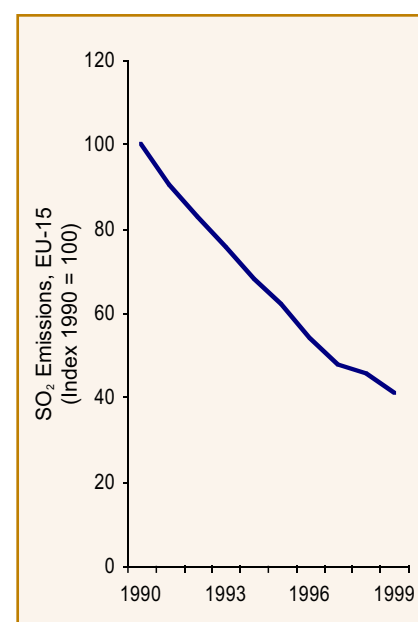


Tonnes SO ₂	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Power Stations	103044	104939	96611	87433	95540	92194	81969	95567	106070	102536	79870
Residential & Commercial	36446	35521	33806	31038	30961	27489	24984	27689	27768	22502	22843
Industrial	37401	31381	32732	33918	39642	32806	30873	32443	30500	27541	24022
Agriculture & Forestry	1260	1307	1331	1331	1518	923	900	863	923	801	869
Transport	6877	5946	6443	6544	6909	7221	7956	8683	9828	3069	3103
Other	758	1094	701	587	535	584	698	869	972	920	782
Total	185786	180188	171623	160851	175105	161217	147380	166114	176061	157369	131489

Source: EPA

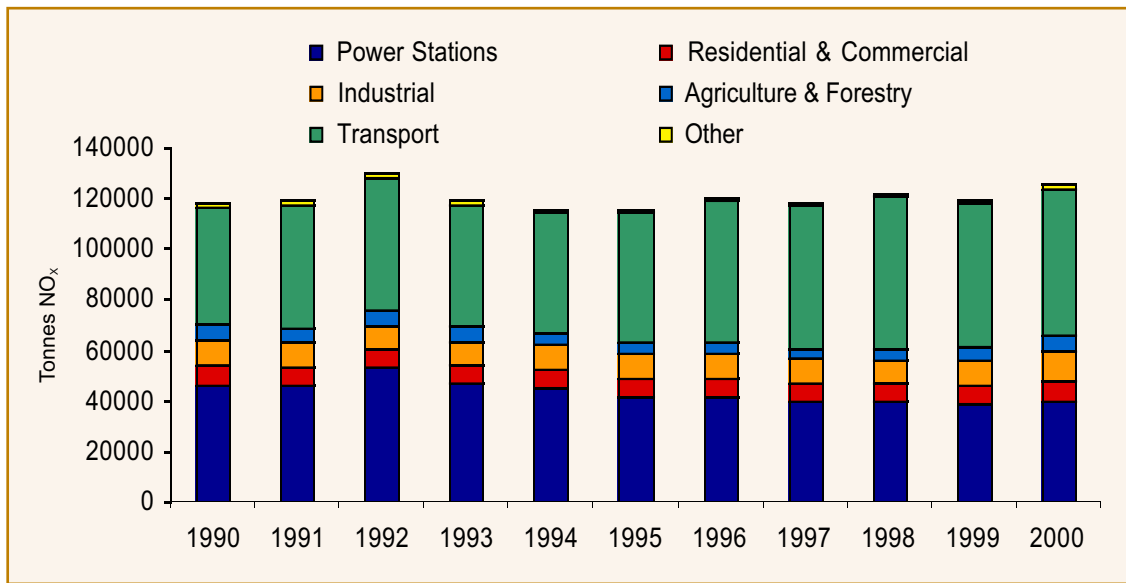
Sulphur dioxide (SO₂) can have adverse effects on human health, vegetation and cultural heritage (protected buildings). Emissions from the combustion of fossil fuels, particularly in electricity generation, account for the bulk of SO₂ emissions. The SO₂ emissions from all power stations in 2000 amounted to 79,870 tonnes, almost 61 per cent of total SO₂ emissions. Overall, emissions of SO₂ have decreased by approximately 29 per cent over the 1990 to 2000 period. This has been attributed to the switch to sulphur free and low sulphur fuels in the energy sector, a reduction in industrial fuel oil combustion and the conversion of solid fuel heating to gas or oil fired systems in the residential sector.

Targets for the reduction of SO₂ have been set out in a number of policies and programmes. Under the Oslo Protocol and the EU large combustion plant (LCP) Directive, Ireland has successfully met the targets set. However, the UN Gothenburg Protocol, adopted in December 1999 and the EU national emissions ceilings Directive set the Irish emissions target for SO₂ at 42 thousand tonnes by 2010. For the EU as a whole, a reduction of SO₂ emissions of 76 per cent from 1990 levels is to be achieved by 2010. Since 1990, total emissions of SO₂ in the EU have decreased by 59 per cent.



Source: EEA

INDICATOR 17: EMISSIONS OF NITROGEN OXIDES



Tonnes NO _x	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Power Stations	46374	46192	53078	46967	45117	41454	41900	40112	39393	38817	39728
Residential & Commercial	7544	7414	7389	7200	7603	7558	7213	7168	7534	7378	7805
Industrial	10391	9334	9259	9358	9850	9513	9632	9185	9278	9788	12512
Agriculture & Forestry	5746	5671	5863	5863	4641	4428	4415	4394	4428	5102	5533
Transport	46470	48832	52542	48273	47484	51513	55923	56618	60233	57221	58286
Other	1501	2190	2318	1377	658	865	943	937	906	944	1268
Total	118026	119633	130449	119038	115353	115331	120026	118414	121772	119250	125132

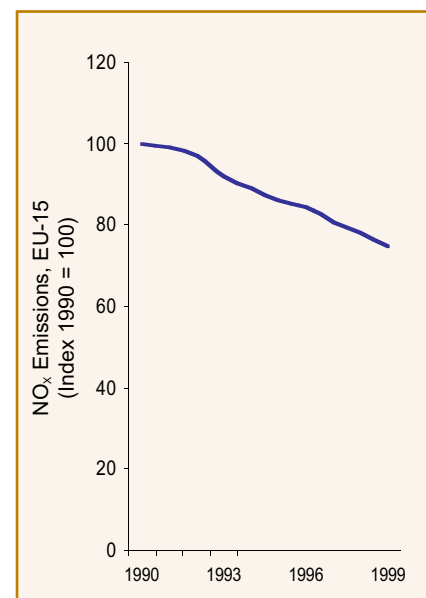
Source: EPA

Nitrogen oxides (NO_x) emissions contribute to the formation of acid deposition and ground level ozone. Emissions of NO_x can also have direct impacts on human health and vegetation. Electricity generation and the transport sector are the main sources of NO_x, with 32 per cent and 47 per cent contributions, respectively.

NO_x emissions showed a decrease in the 1993-1995 period, but emissions have increased by nearly 9 per cent since 1995 to 125,000 tonnes, due in the main to the significant growth in road traffic. Although emissions of NO_x from power stations remain quite large, the application of technological NO_x controls at several of the largest power stations in the early 1990s has resulted in a general decrease of 25 per cent during the 1992 to 2000 period. As a result, Ireland is presently in compliance with the limits set out in the EU Large Combustion Plants Directive.

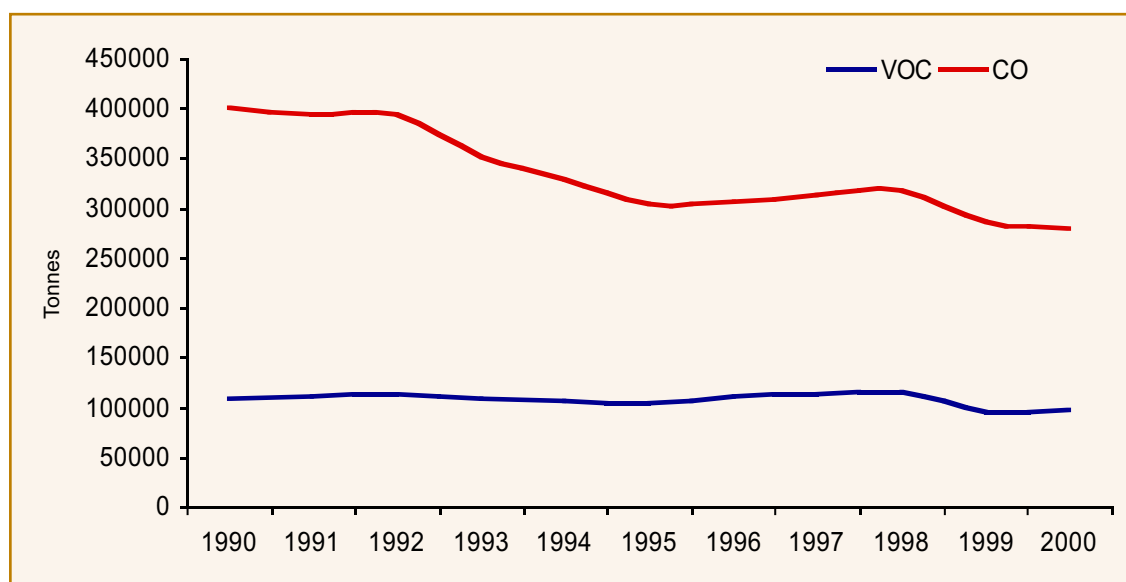
More recently however, a target has been set in the EU national emissions ceiling (NEC) Directive; for Ireland, total NO_x emissions need to be stabilised at 65 thousand tonnes.

For the EU as a whole, NO_x emissions have decreased by 25 per cent in the 1990 to 1999 period. In order to reach the target set in the NEC Directive, a further reduction of 51 per cent will need to be achieved by 2010.



Source: EEA

INDICATOR 18: EMISSIONS OF VOC AND CARBON MONOXIDE



Tonnes	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
VOC	108,706	110,138	113,116	107,211	105,621	103,227	109,281	112,593	113,922	94,579	97,825
CO	400,920	394,487	394,596	350,340	329,253	304,484	306,832	312,159	317,732	285,310	279,571

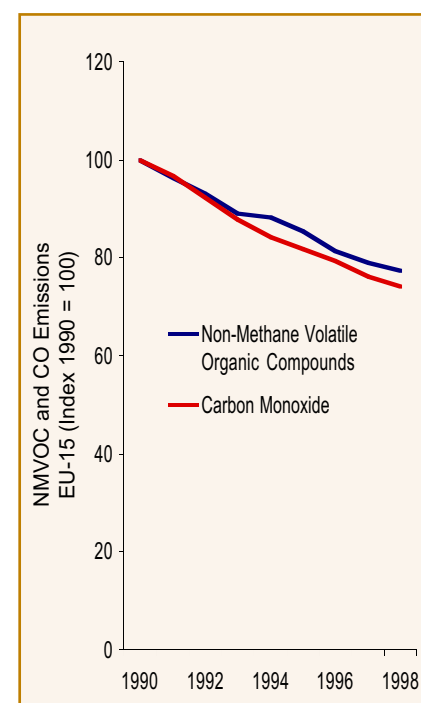
Source: EPA

Carbon monoxide (CO) and volatile organic compound emissions (VOC) can pose a significant threat to human health and lead to the formation of ozone. The transport sector is the largest contributor of both CO and VOC emissions.

Emissions of VOC, determined mainly by road traffic and solvent use, showed an overall decrease of 10 per cent in the 1990 to 2000 period. Although the use of catalytic converters contributed somewhat to this improved situation, the benefits were partially offset by the large increase in vehicle numbers. Paint application and the domestic use of various solvent-based products account for most of the emissions in the solvent-use category. Reductions are necessary in VOC emissions in order to comply with international obligations including the EU national emission ceilings Directive.

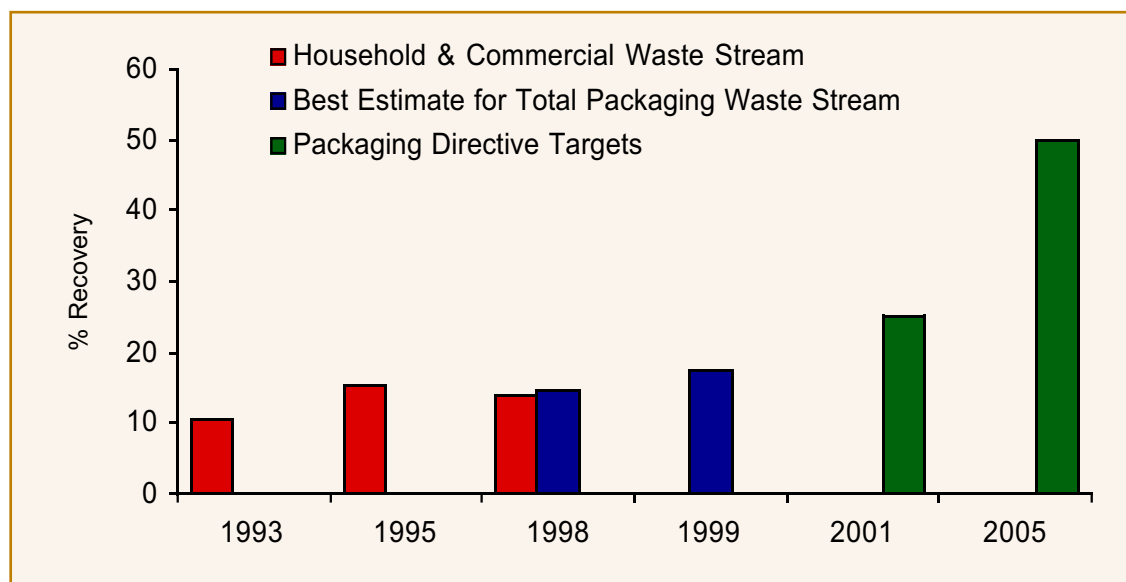
CO principally originates from the incomplete combustion of fuel. Overall emissions decreased by 30 per cent over the 1990 to 2000 period, due mainly to the use of catalytic converters and the shift away from solid fuels in the residential sector to natural gas and kerosene.

The EU overall has reduced emissions of ozone forming gases by 27 per cent between 1990 and 1999 and is on target towards reaching a 51 per cent reduction of emissions by 2010. However, the EEA has indicated that further efforts are needed, particular in Portugal, Greece, Spain and Ireland.



Source: EEA

INDICATOR 19: RECOVERY RATES OF PACKAGING WASTE



% Recovery	1993	1995	1998	1999	2001	2005
Household & Commercial Waste Stream	10.3	15.6	13.8			
Total Packaging Waste Stream			14.8	17.4		
Packaging Directive Targets					25	50

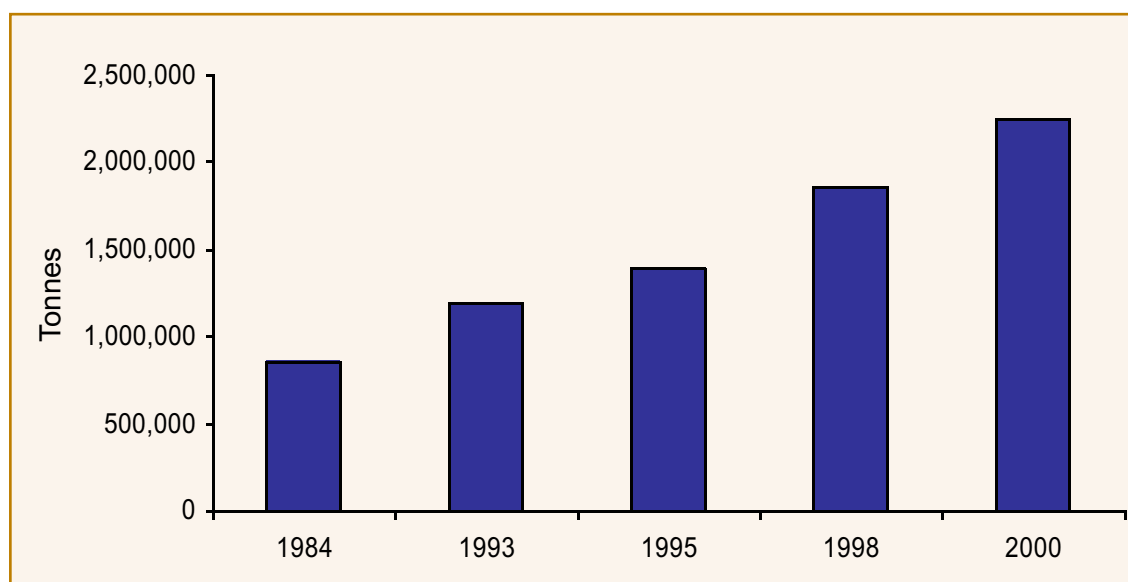
Source: EPA

Packaging waste includes materials such as glass bottles, tin cans, aluminium containers, paper and cardboard. The EU Directive on packaging and packaging waste has imposed targets on the recycling and recovery of packaging waste across the EU. The target set for Ireland is 25 per cent recovery of packaging waste by 2001*. By December 2005, 50 to 65 per cent (by weight) of packaging waste is to be recovered with further stipulations concerning recycling rates of packaging materials. Targets can be achieved by energy recovery and recycling, however, owing to the absence of municipal waste incineration capacity in Ireland, these targets have to be met by recycling alone. Member States, including Ireland, must take the necessary steps to set up return, collection and recovery systems so that the targets set by the Directive can be met.

Total packaging waste in Ireland has been estimated at more than 704 thousand tonnes in 1999, an increase of 3.1 per cent from 1998. Recovery of packaging waste in 1999 is estimated at only 17.4 per cent which indicates that Ireland has considerable progress to make in order to meet its international obligations. Higher and sustained levels of recycling are crucial to dealing with the increased levels of packaging waste that are being produced.

* The compilation process for 2001 statistics was ongoing at time of writing.

INDICATOR 20: HOUSEHOLD AND COMMERCIAL WASTE



Tonnes	1984	1993	1995	1998	2000
Household & Commercial Waste Collected	854,866	1,186,312	1,385,439	1,852,450	2,242,292

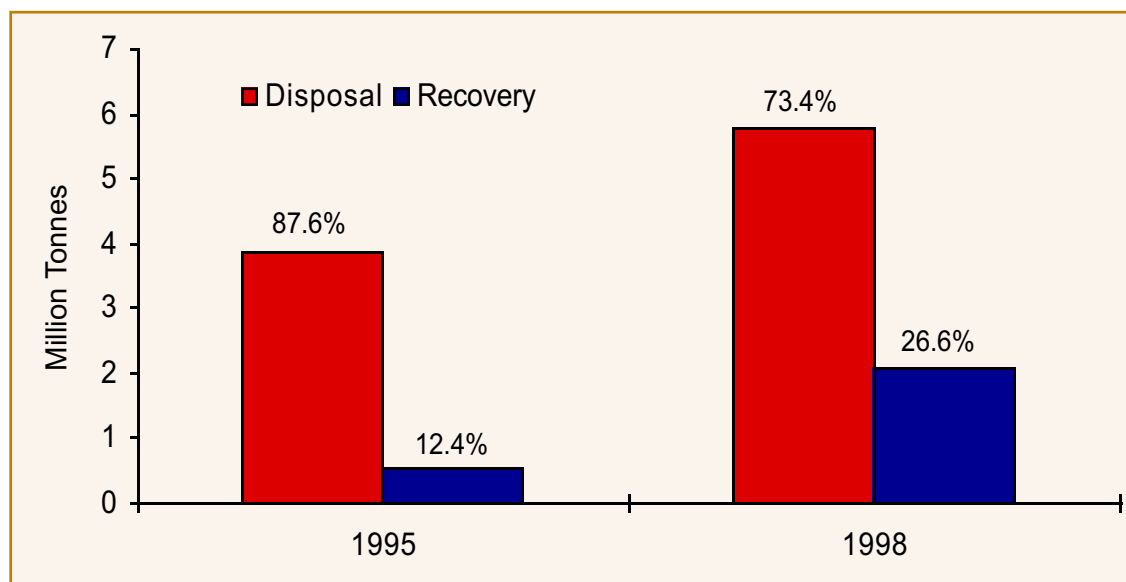
Source: EPA

Waste management is one of the most problematic and challenging environmental issues in Ireland at the present time. The latest figures show clearly that waste quantities are continuing to increase. This increase places a severe pressure on the environment and on the existing waste management services and infrastructure.

Almost 2.3 million tonnes of household and commercial waste were generated in Ireland in 2000 – representing an increase of almost 62 per cent in five years. It is estimated that almost 600 kg of waste is generated by each person in the State every year. Landfill remains the main disposal route, accounting for 87.8 per cent of the household and commercial waste stream in 2000. Only 12.2 per cent was recycled. The Government has set national targets in relation to waste aimed at stabilising waste generation, reducing dependency on landfill and increasing recovery rates. While the recycling rate for the household and commercial waste stream has risen by three per cent between 1998 and 2000, it is still a considerable distance away from the Government's target of a 35 per cent recycling rate.

There is scope to reform the Irish fiscal system to fully apply the 'polluter pays principle' in relation to waste management. One such example is the recent introduction of an environmental levy on plastic bags, which aims at reducing the use of an estimated 1.26 billion plastic bags in Ireland each year. There is scope to consider further financial mechanisms to encourage minimisation and reuse.

INDICATOR 21: INDUSTRIAL WASTE ARISING AND DISPOSAL



Million Tonnes	1995	1998
Disposal of Reported Industrial Waste	3.878	5.769
Recovery of Reported Industrial Waste	0.547	2.091

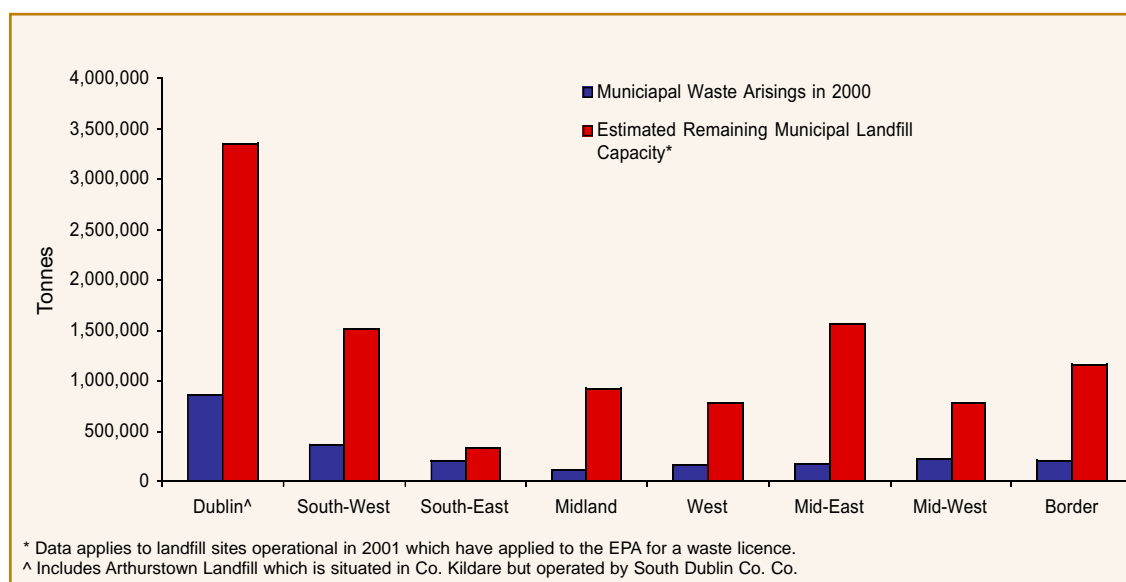
Source: EPA

The latest information on industrial waste generation in Ireland is for 1998*. A direct comparison of estimated quantities suggests a significant growth in industrial waste since 1995. In 1998, 73 per cent of industrial waste was disposed of, mainly to landfill, with only 27 per cent recovered. This compares with 88 per cent disposal and 12 per cent recovery in 1995.

Main recovery routes were through reuse, recovery of organic materials and landspreading. The majority of recovery is achieved in the Food Products, Beverages and Tobacco and Wood / Wood Products sectors where the wastes are recoverable through landspreading or reuse in secondary materials such as fibre or chipboards. It is notable that the manufacturing sector reported increased recovery rates from 31 per cent in 1995 to 51.4 per cent in 1998. This trend is attributed in part to the controls in place through the Integrated Pollution Control (IPC) licensing regime, operated by the EPA, which places an obligation on industrial companies to eliminate or significantly reduce waste at source.

* More up-to-date statistics are being compiled at time of writing.

INDICATOR 22: REMAINING LANDFILL CAPACITY



Regional Authority Area	Municipal Waste Arisings in 2000 (Tonnes)	Estimated Remaining Municipal Landfill Capacity (Tonnes)
Dublin	851,325	3,348,000
South-West	358,082	1,507,000
South East	207,733	338,000
Midland	106,541	919,000
West	152,528	775,000
Mid-East	176,003	1,560,000
Mid-West	225,739	780,000
Border	200,744	1,156,000
Total	2,278,695	10,383,000

Source: EPA

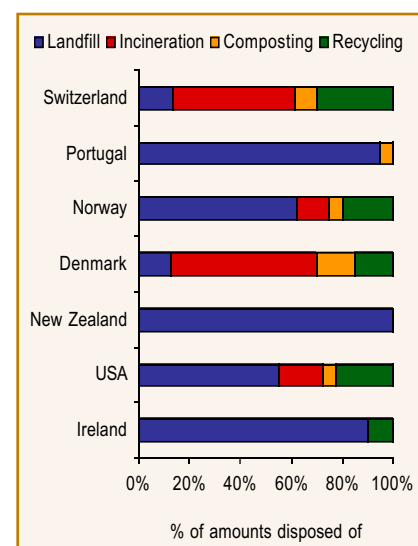
Irish waste management practice is still heavily reliant on landfill as a means of disposal. In total, over 2.28 million tonnes of municipal waste were consigned to landfill in 2000. Government policy on waste reaffirms the principle that waste management is firmly grounded in the waste hierarchy with prevention and minimisation the most favoured options, and disposal to landfill the least desirable option.

This indicator highlights the remaining licensed landfill capacity available within the various regions. Nationally, there are an estimated 10.38 million tonnes of landfill capacity available for municipal waste disposal. However, based on current municipal waste disposal rates, licensed landfill site capacity in Ireland will run out in approximately four and a half years. Regions with under four years' landfill capacity remaining are the South-East, Mid-West and Dublin. Ireland is fast reaching a crisis situation in relation to waste management.


Ireland is in urgent need of a modern integrated waste management infrastructure to cater for the needs and aspirations of a 21st century society. In addition the recent introduction of a landfill tax will promote a more sustainable approach to waste management. Experience in other EU countries indicates that such a tax led to a significant drop in the amount of construction and demolition waste consigned to landfill.

Currently Ireland has relatively low levels of materials recycling, no significant biological waste treatment capacity and no infrastructure for large-scale composting or thermal treatment with energy recovery. Investment should be aimed at developing an adequate, integrated waste management infrastructure with the highest operating standards.

See Indicators 20, 21, 40



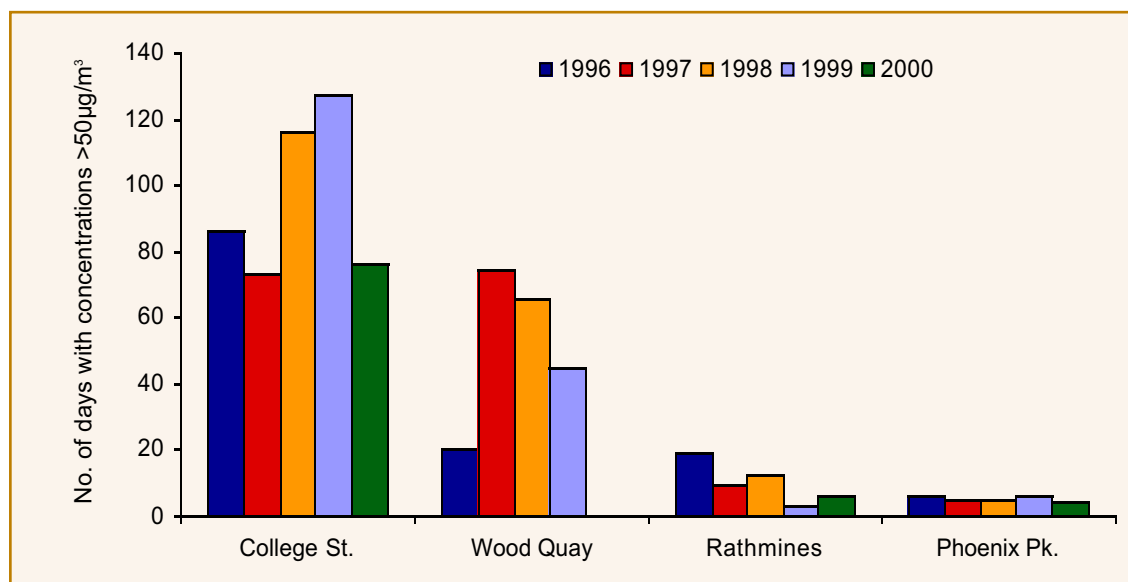
Source: OECD (late 1990s)



Environmental Quality

How well the pressures on the environment are controlled by society can be determined by assessing and monitoring changes in the quality of air, inland waters, marine and coastal waters and soil, and by monitoring the uses made of the natural resource base. Changes in the quality of the environment can impact on human health and on biodiversity and can have adverse economic consequences for sectors such as tourism, agriculture, fisheries and aquaculture.

INDICATOR 23: AIRBORNE PARTICULATE MATTER (PM₁₀)



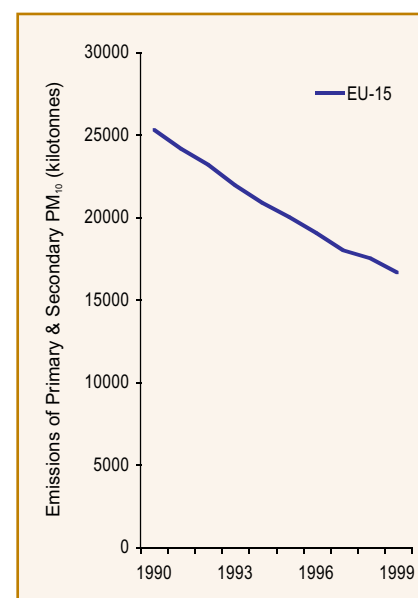
	College St.	Wood Quay	Rathmines	Phoenix Pk.
1998 number of days with concentrations >50 µg/m ³	116	66	12	5
1999 number of days with concentrations >50 µg/m ³	127	45	3	6
2000 number of days with concentrations >50 µg/m ³	76		6	4

Source : EPA

In recent years the emphasis with regard to airborne particulate pollution has focused on PM₁₀, very small particles which can penetrate deep into the respiratory tract. Inhalation of these particles can increase the risk, frequency and severity of respiratory disorders. PM₁₀ in the atmosphere results from direct emissions (primary PM₁₀) or from emission of precursors (nitrogen oxides, sulphur dioxide and ammonia) which are transformed by chemical reaction in the atmosphere (secondary PM₁₀). The main sources of PM₁₀ are the combustion of solid fuels and road traffic, in particular emissions from diesel engines.

Recent EU legislation established an average daily limit of 50 µg/m³ for PM₁₀ concentrations and requires that this limit is not exceeded more than 35 times in a calendar year (this is to be attained by 2005). Results of monitoring in Cork and Dublin show that PM₁₀ levels are high along streets with large volumes of traffic. In College Street in Dublin, the number of days in 2000 with average PM₁₀ greater than 50 µg/m³ was 76, more than twice the number permitted by the EU Directive.

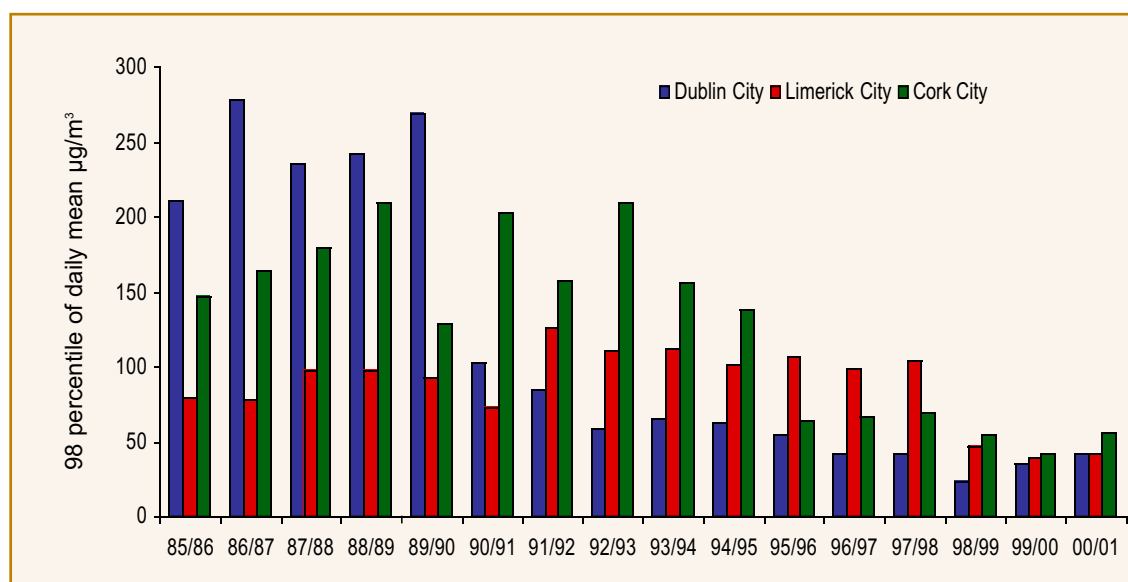
Emissions of primary and secondary PM₁₀ in the EU during the 1990s have fallen significantly, due mainly to improved technologies and abatement measures adopted by the energy industry and through the introduction of catalytic converters for vehicles. In Ireland, however, positive advances made by catalytic converters have been offset by the continued growth in the number of vehicles. Large uncertainties still exist in the available emission inventories for PM₁₀ and much work remains to be done to relate ambient concentrations to individual sources.



Source: EEA

See Indicators 8, 9, 10, 24

INDICATOR 24: SMOKE CONCENTRATIONS IN URBAN AREAS



98 percentile of daily mean µg/m³

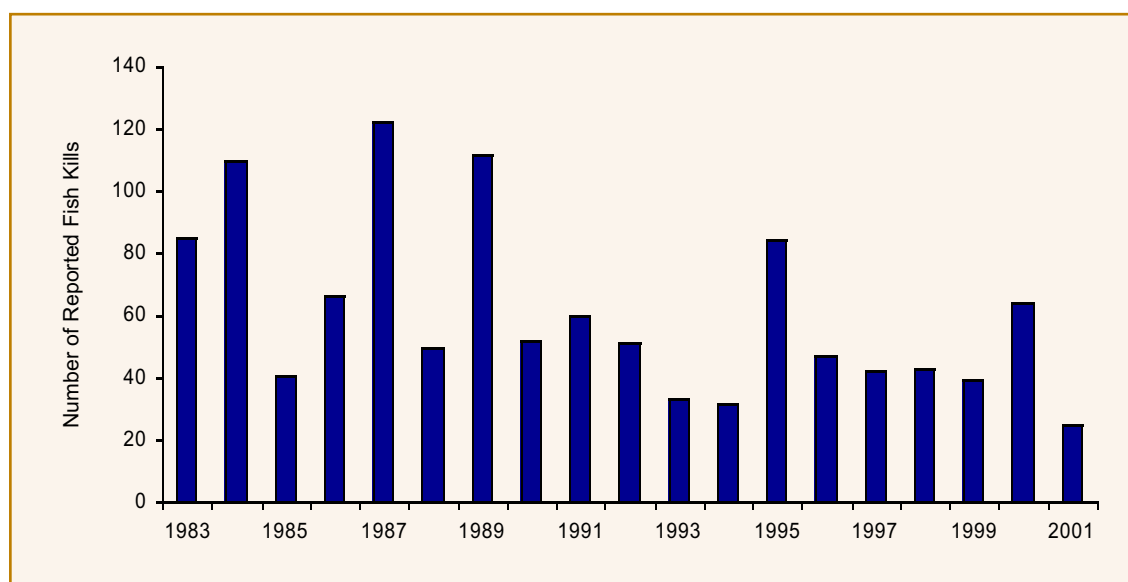
	85/86	87/88	89/90	90/91	92/93	94/95	96/97	98/99	99/00	00/01
Dublin City	211	235	269	102	58	62	41	23	35	42
Limerick City	79	98	92	73	110	101	99	47	39	41
Cork City	147	179	128	202	209	138	66	54	42	56

Source: EPA

Smoke consists of fine solid particles suspended in air that mainly arise from the incomplete burning of fossil fuels such as coal, oil and peat, in the domestic, industrial and transport sectors. Open fires in dwelling houses are a major source of much of the particulate material emitted to air as smoke. The main concern is the potential effect on human health, as particles of small size can be inhaled into and deposited in the respiratory system and remain there for long periods of time.

Smoke levels in Dublin have dramatically reduced since 1990 and have stabilised at very low values. This reduction underlines the effectiveness of smoke control legislation introduced in the Greater Dublin area in 1990 which banned the marketing, sale and distribution of bituminous coal. A similar ban on bituminous coal came into force in Cork City in 1995 and in Arklow, Drogheda, Dundalk, Limerick and Wexford in 1998. In 2000, the ban was extended to Celbridge, Galway, Leixlip, Naas and Waterford. All areas have shown a significant improvement overall in terms of air quality since the controls were introduced. Further measures include a general reduction in sulphur content and an extension of the ban to Bray, Kilkenny, Sligo and Tralee in 2003 and increased penetration of smokeless fuels in Athlone, Carlow, Clonmel and Ennis in 2004.

INDICATOR 25: FISH KILLS



	1984	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
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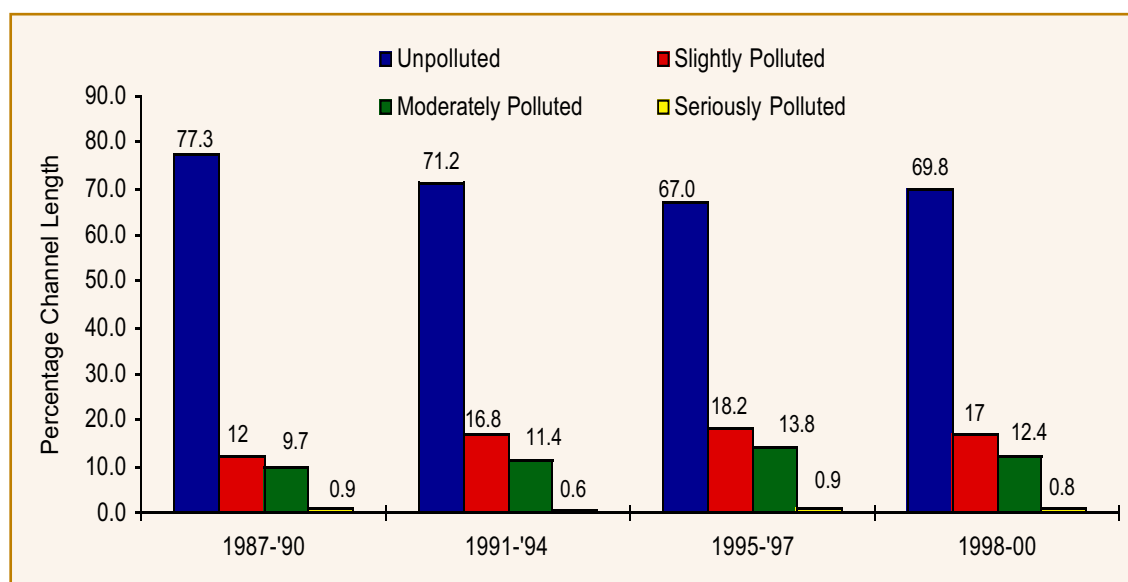
No. of Fish Kills	110	122	112	52	60	51	33	32	84	47	42	43	39	64	25
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Source: Marine Institute

Fish kills are a symptom of extreme environmental disruption and are among the most dramatic and damaging impacts of water pollution. Frequently they arise as a result of unauthorised or accidental discharges of wastes such as silage liquors, manure slurries and sewage.

The number of reported fish kills decreased in 2001 to 25. The data show that high numbers of kills during the 1980s were followed by substantial reductions in the early 1990s. These reductions followed initiatives by the Central and Regional Fisheries Boards and central and local government in tackling the problem, especially pollution from the agricultural sector. Upsurges in 1995 and 2000 have been attributed to various sectors such as agriculture, industry, sewage and civil and water works. However, agriculture remains the most frequently quoted source of fish kills.

INDICATOR 26: RIVER WATER QUALITY



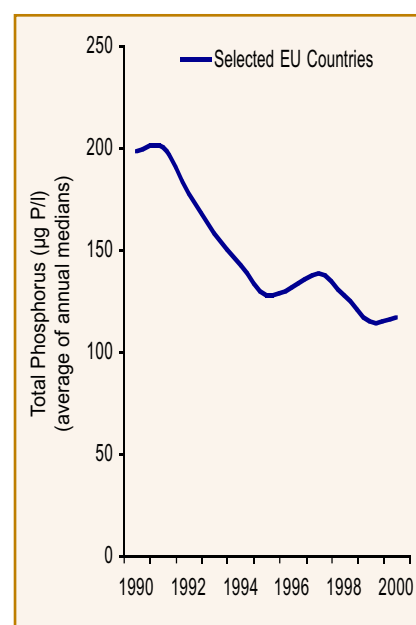
% of Channel Length	1987-'90	1991-'94	1995-'97	1998-00
Unpolluted	77.3	71.2	67.0	69.8
Slightly Polluted	12.0	16.8	18.2	17.0
Moderately Polluted	9.7	11.4	13.8	12.4
Seriously Polluted	0.9	0.6	0.9	0.8

Source: EPA

The most recent assessment of river water quality in Ireland shows an improvement in water quality for the first time since surveys began. Unpolluted channel length increased from 67 per cent in the period 1995-1997 to almost 70 per cent in the period 1998-2000. However, the overall status is still unacceptably poor in comparison to what it was 20 years ago. Over 30 per cent of the national river channel is considered to be polluted to some extent. This pollution is attributed in the main to nutrient (phosphate) enrichment or eutrophication. While the degree of pollution is minor in many cases, it is of concern in view of its potential impact on the pollution-sensitive trout and salmon in rivers and lakes. While most of the slight and moderate pollution is attributed to agricultural activities, municipal waste discharges remain responsible for most of the serious pollution.

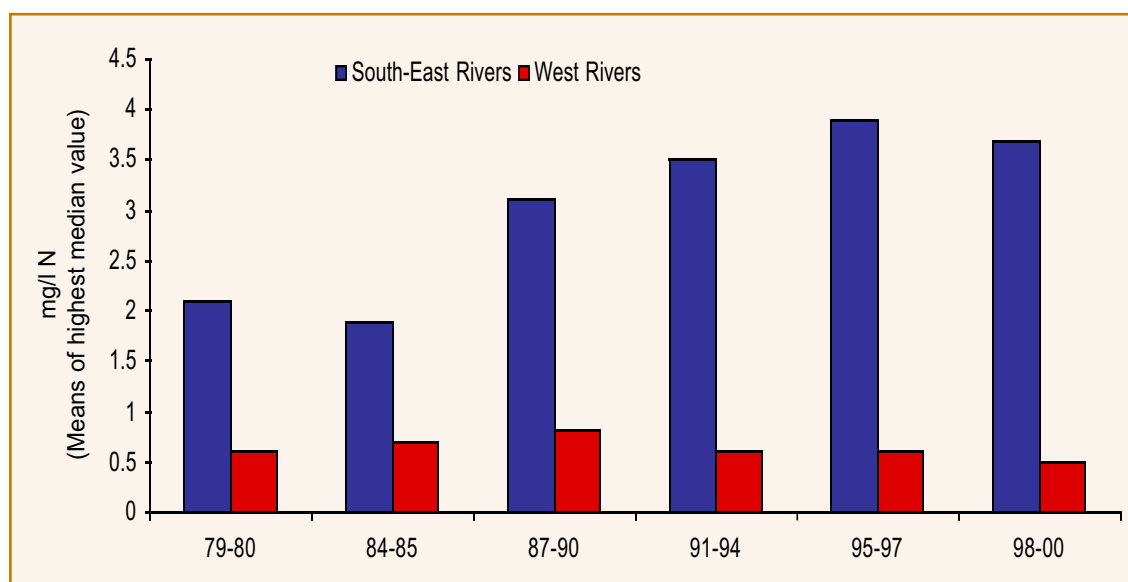
Phosphorus concentrations in EU and Accession countries generally fell during the 1990s. This has been attributed to general improvements in waste water treatment facilities and other controls on emissions from agricultural activities.

While the length of polluted channel in Ireland is still at an unacceptably high level, the recent improvement in river water quality may be an indication that changes in the approach to pollution control are proving effective. The improvements have mainly occurred in catchments that have had intensive management programmes implemented in the past three to five years.



Source: EEA

INDICATOR 27: NITRATES IN RIVERS



Means of Highest Median Values	79-80	84-85	87-90	91-94	95-97	98-00
South-East Rivers	2.1	1.9	3.1	3.5	3.9	3.7
West Rivers	0.6	0.7	0.8	0.6	0.6	0.5

Source: EPA

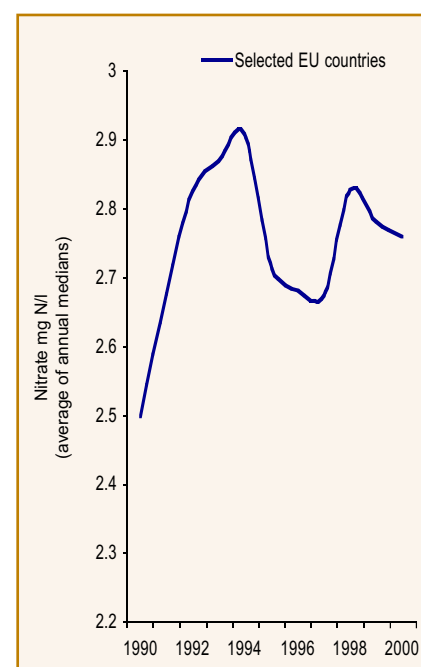
High nitrate levels in surface and groundwaters used as sources of drinking water supply may constitute a public health risk. Excess nitrate is also of concern in relation to eutrophication, especially in marine waters where nitrate generally acts as the growth-determining nutrient.

Agricultural fertilisers and farmyard waste have been identified as the main causes of nitrate enrichment of waters in many European countries. Sewage discharges can also significantly contribute to such contamination. Nitrate levels in European rivers show some change since 1990. Highest concentrations tend to be in the countries with intensive agricultural production.

Irish agriculture is predominantly grassland-based which presents a lower risk of severe nitrate pollution than other agricultural activities, e.g., tillage. The level of nitrate enrichment in surface waters is moderate and a downward trend may be emerging. Rivers in the west have significantly lower levels of nitrate than those in the south-east. This indicator clearly shows the contrast between the two regions with values in the south east being from five to seven times higher than in the west. This reflects differences between the two regions in respect of population density, the intensity of farming activity and in particular the much greater extent of tillage land in the south east.

The EU nitrates Directive requires member states to take specific measures to protect surface and groundwaters from nitrate contamination from agricultural activities. In accordance with the Directive, Ireland has established monitoring programmes in relation to nitrates in waters and has issued a code of practice for farmers to protect waters from pollution by nitrates from agriculture. Recent assessments of water quality, especially in estuaries, indicate a need for additional measures to be taken to reduce nitrate inputs from farming and proposals are now being developed to strengthen the application of good agricultural practice in all areas. Legal proceedings have been taken against Ireland by the European Commission for alleged failure to implement the Directive fully.

See Indicators 5, 26, 28, 44



Source: EEA

INDICATOR 28: ESTUARINE WATER QUALITY

The estuarine and coastal environment is subject to a wide variety of pressures. These include inputs of organic matter, nutrients and contaminants from sources such as urban waste water, industrial discharges, riverine inputs and accidental spillages. Local impacts can also arise from marine-based activities such as dredging, aggregate extraction and aquaculture. Over the past decade there has been increasing concern in relation to the discharge of nutrients to estuaries and the potential for eutrophication of these water bodies.

Regular water quality monitoring is carried out in 25 estuaries and bays around the coast, including the estuaries of most of the major rivers, to assess the effects of discharges of nutrients (nitrogen and phosphorus) and organic matter.

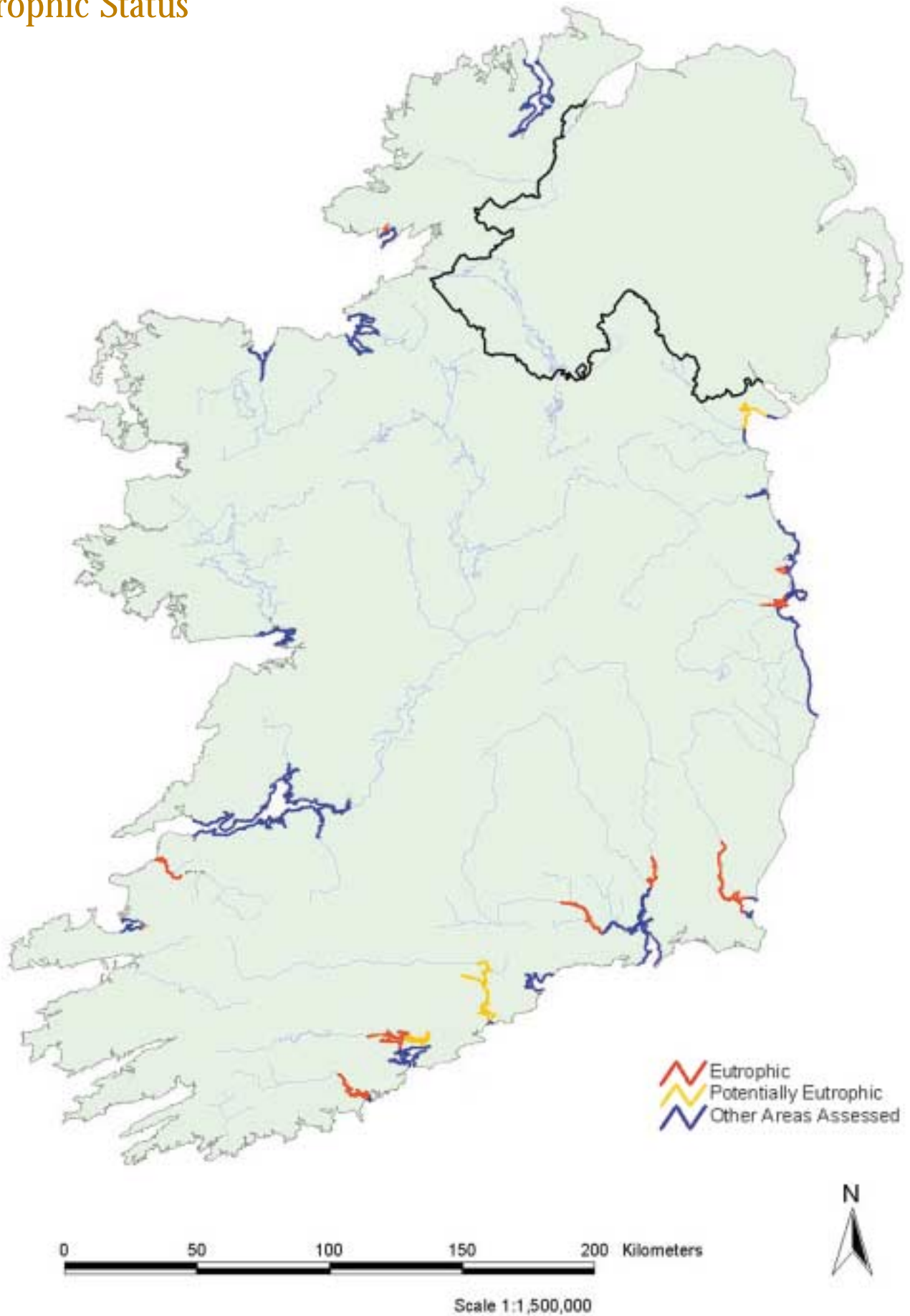
In 2001 an assessment was made of the trophic status of estuaries and bays in Ireland based on survey data gathered over a five-year period up to 1999. The assessment was made for the purposes of the EU Directives on urban waste water and on nitrates from agricultural sources. The assessment was based on the development of a set of quantitative water quality criteria and on applying these to the survey data.

As a result of the assessment thirteen sections of tidal waters in Ireland were considered to be eutrophic and four others were considered to be potentially eutrophic. As shown on the map, the majority of these are located in the east and south of the country.

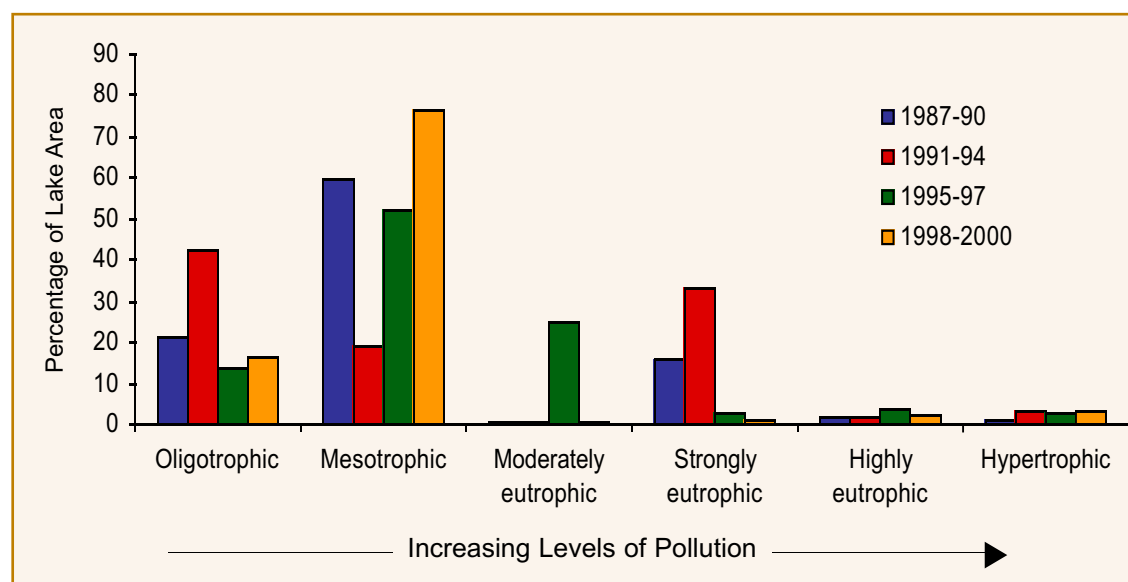
From the most recent assessment of general water quality in the period 1998-2000 a number of estuaries and bays continue to exhibit pollution due to the break-down of organic matter in sewage. The most serious instances of such pollution were found in the Lee Estuary and Inner Cork Harbour, the estuary of the Castletown river in the vicinity of Dundalk and the Upper Lee (Tralee) Estuary near Tralee.

In addition, intermittent pollution due to effluent discharges was found in the Boyne, Liffey, Shannon and Garavogue estuaries. Moderate organic pollution caused primarily by industry was found in Killybegs Harbour and in the Munster Blackwater estuary.

Trophic Status



INDICATOR 29: LAKE WATER QUALITY



Percentage of Lake Area	1986-90	1991-94	1995-97	1998-2000
Oligotrophic	20.9	42.3	13.5	16.16
Mesotrophic	59.8	18.9	51.9	76.71
Moderately eutrophic	0.7	0.7	25.2	0.46
Strongly eutrophic	15.6	32.9	2.9	1.29
Highly eutrophic	1.8	1.9	3.7	2.37
Hypertrophic	1.1	3.3	2.7	3.02

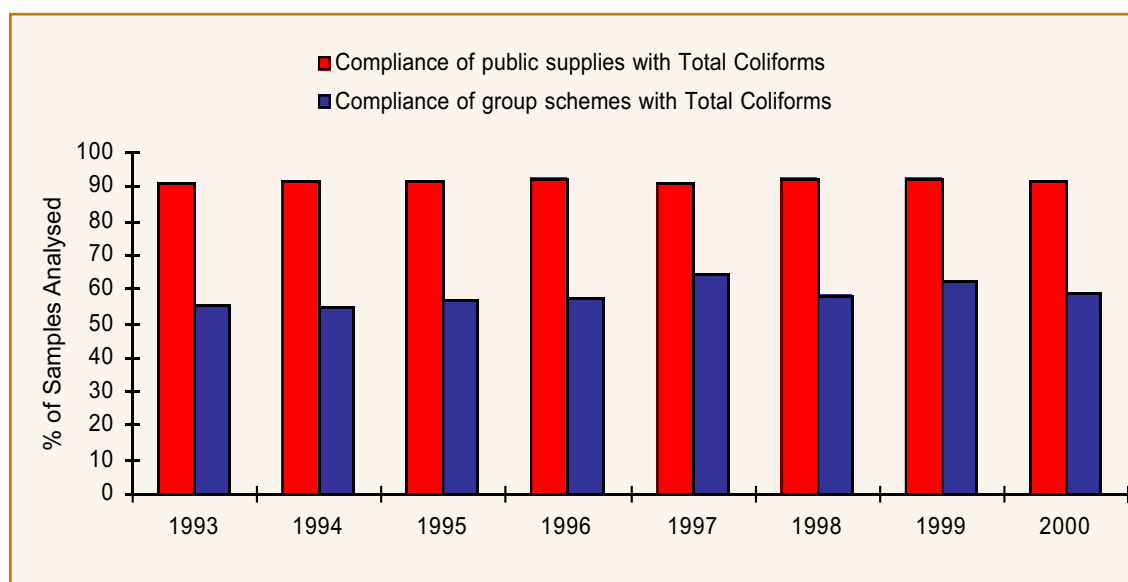
Source: EPA

Ireland's lakes are a national asset on which we depend for drinking water, for angling, to supply the needs of agriculture and industry and as an important amenity and recreational resource. The most significant threat to the water quality of lakes in Ireland is eutrophication, which is the enrichment of waters, beyond natural levels, by the nutrients phosphorus and nitrogen. Some fish species, in particular Arctic Charr, are particularly sensitive to eutrophication. This fish has disappeared from some lakes in Ireland and has suffered a collapse in population in other lakes most notably Loughs Corrib and Leane.

In general the overall water quality in lakes remains quite high. The most recent assessment of lake water quality shows that of the 304 lakes monitored, 93 per cent of the total lake area is considered to be satisfactory, with little or no impairment of beneficial uses. Observed improvements in water quality, particularly in the Shannon lakes may however be due in part to the infestation of zebra mussels which filter particulate matter, including algae from the water.

The remaining 7 per cent of lake area examined is subject to varying degrees of pollution, which is due in the main to excess inputs of phosphorus. Long term serious eutrophication problems continue to be reported in many of the larger lakes, such as Lough Sheelin. The primary source of the phosphorus is considered to be from agricultural activities. However, point sources, such as waste water discharges from municipal and industrial plants are also responsible.

INDICATOR 30: DRINKING WATER QUALITY



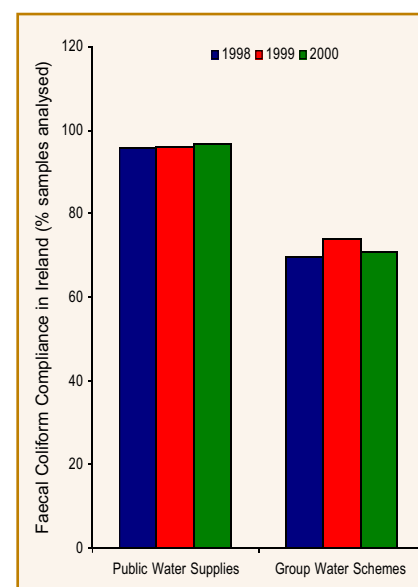
	1993	1994	1995	1996	1997	1998	1999	2000
Compliance of public supplies with Total Coliforms	91	91.35	91.28	92.39	91.08	91.95	92.06	91.28
Compliance of group schemes with Total Coliforms	54.9	54.5	56.81	57.62	64.14	58.01	62.2	58.60

Source: EPA

The maximum admissible concentration for total coliforms in drinking water is zero. The latest report on drinking water quality in Ireland shows that 91 per cent of public supplies and only 58 per cent of group schemes meet that standard.

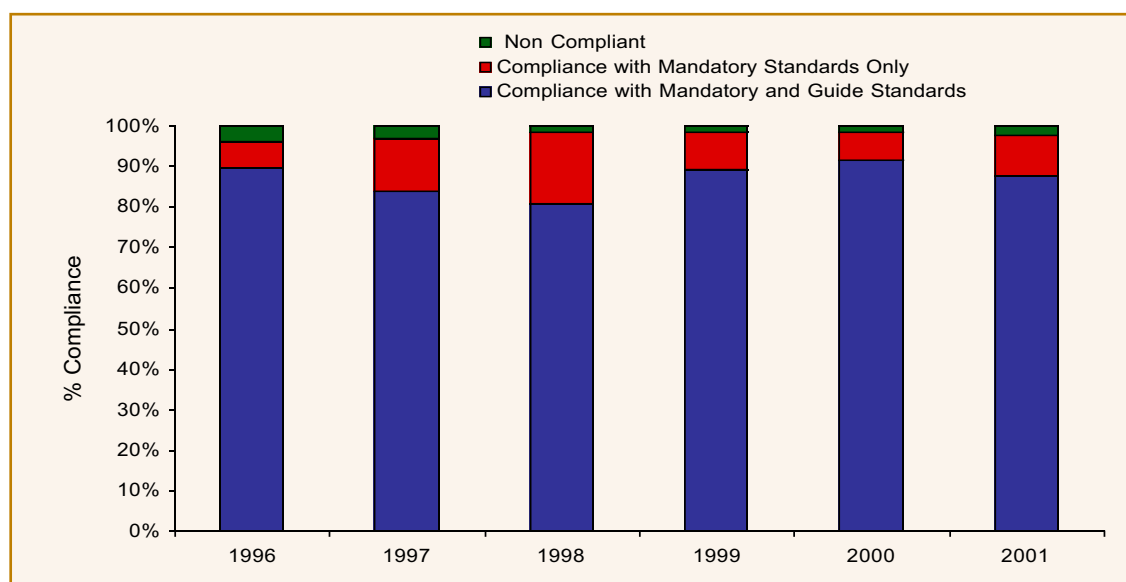
The deterioration in the quality of water from group water supply schemes is a cause for concern. In most cases these water supplies have been contaminated by improperly sited septic tanks and slurry pits, direct animal access to water sources, intensification of animal-rearing and inappropriate land spreading of animal manures.

The National Development Plan provides over €533 million for capital, maintenance and renewal of rural water schemes over the period 2000 to 2006. Although a great deal remains to be done, some pilot treatment programmes have commenced and are bearing fruit. While the investment in up-grading treatment facilities is to be welcomed, there must also be continued emphasis on measures such as the responsible maintenance of septic tanks, proper disposal of farm wastes and disinfection of private water supplies.



Source: EPA

INDICATOR 31: BATHING WATER QUALITY



Bathing Water Quality	1996	1997	1998	1999	2000	2001
% Compliance with Mandatory and Guide Standards	89.5	83.9	80.8	89.2	91.5	87.8
% Compliance with Mandatory Standards Only	6.5	12.9	17.7	9.3	7	9.9
% Non Compliant	4	3.2	1.5	1.5	1.5	2.3

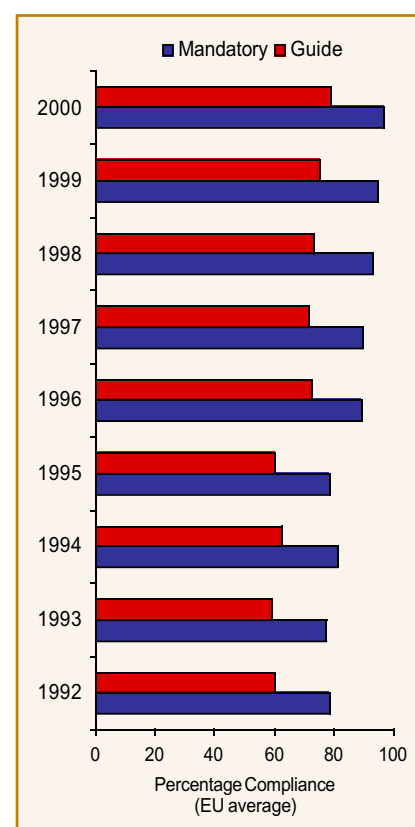
Source: EPA

Throughout the Summer bathing season in Ireland monitoring of bathing water quality is undertaken at 122 coastal and 9 inland bathing areas around the country and the results are assessed against EU standards designed to protect both public health and the environment.

In general the quality of bathing water in Ireland remains high, with most of the bathing areas consistently complying with the minimum mandatory standards set by the EU. In addition, compliance with the stricter guideline standards is also high, although it tends to be more variable. The main sources of pollution of bathing waters include untreated waste water discharges and run-off from agricultural land affecting streams that discharge to bathing areas.

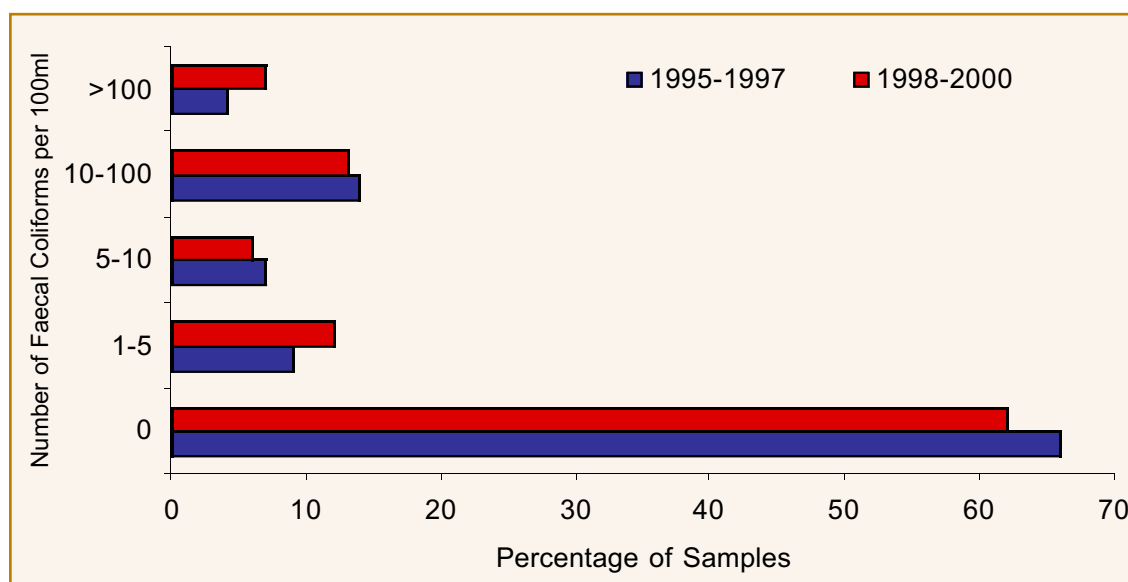
At a European level, Ireland's bathing areas, both coastal and freshwater, compare very favourably with those in other countries. Overall, the most recent EU report rates the quality of Ireland's bathing water as excellent in both coastal and freshwater areas.

The bathing water Directive is more than 25 years old and since its adoption has contributed greatly to the improvement of bathing water quality in Europe. However, it is also recognised that the Directive needs to be updated to take account of advances in science and technology. As a result the EU has commenced the process of developing a new bathing water Directive.



Source: EC

INDICATOR 32: GROUNDWATER QUALITY



Faecal Coliforms per 100ml	0	1-5	5-10	10-100	>100
1995-1997	66	9	7	14	4
1998-2000	62	12	6	13	7

Source: EPA

Groundwater is an important water resource in Ireland accounting for approximately one quarter of the total water abstracted for public and private drinking water supply. In rural areas over 85 per cent of water abstracted is from groundwater supplies and it is estimated that there are at least 200,000 wells in the country. In general the majority of private groundwater supplies do not undergo any treatment prior to use.

Recent surveys of groundwater quality indicate that groundwaters in Ireland have an unacceptably high level of contamination. In the period 1998-2000 it was found that 38 per cent of samples tested showed bacteriological contamination, an increase of 4 per cent over the 1995-1997 period. Sources of bacteriological pollution include septic tank effluent, agricultural organic waste and landfills.

The widespread occurrence of bacteriological contamination emphasises the importance of disinfection of drinking water drawn from groundwater sources and the need for better controls over the siting of water supply sources.

In addition, somewhat elevated nitrate levels were also found in approximately 20 per cent of the wells sampled. Groundwaters in counties Carlow, Cork, Kerry, Louth and Waterford have been identified by a panel of experts as being polluted or susceptible to pollution by nitrates from agricultural sources.

INDICATOR 33: QUALITY OF SHELLFISH AREAS

The Irish shellfish industry is continuing to expand at a rapid rate and in order to safeguard the consumer, environment and public health monitoring programmes have been put in place. EU legislation introduced in 1991 lays down specific health conditions in relation to the production and placing on the market of live shellfish.

In 2000, 61 shellfish production areas were sampled in the monitoring programme under the EU Directive and are classed into three categories. 34 per cent of the areas are Class A sites, which permits direct sale of the shellfish for human consumption. However, 54 per cent of the sites were classed as Class B – which requires that the shellfish are purified in an approved plant for 48 hours prior to their sale for human consumption. Two per cent of the sites were considered to be Class C, which necessitates relaying of the shellfish for at least two months in clean seawater before they can be sold for human consumption. It should be noted that some sites fall into more than one category.

Summary of Classification Scheme for Shellfish Production Areas

Classification	Faecal coliforms/ <i>E.coli</i> per 100g of shellfish flesh ¹	Requirements
A	Less than 300 faecal coliforms or 230 <i>E.coli</i>	None - sale for direct human consumption permitted
B	Less than 6000 faecal coliforms or 4600 <i>E.coli</i> in 90% of samples	Purification in an approved plant for 48 hours prior to sale for human consumption
C	Less than 60000 faecal coliforms	Relaying for a period of at least two months in clean seawater prior to sale for human consumption

¹five-tube, three-dilution MPN test

Classification of Shellfish Sites sampled between 1986 and 2000. (Note that percentages do not add to 100 as sites with more than one class are omitted)

	2000	1998-99	1991-94	1987-90	1986
Total Number	61*	58**	58***	25****	13
Class A (%)	34	24	55	12	38
Class B (%)	54	60	29	60	54
Class C (%)	2	2	3	12	8

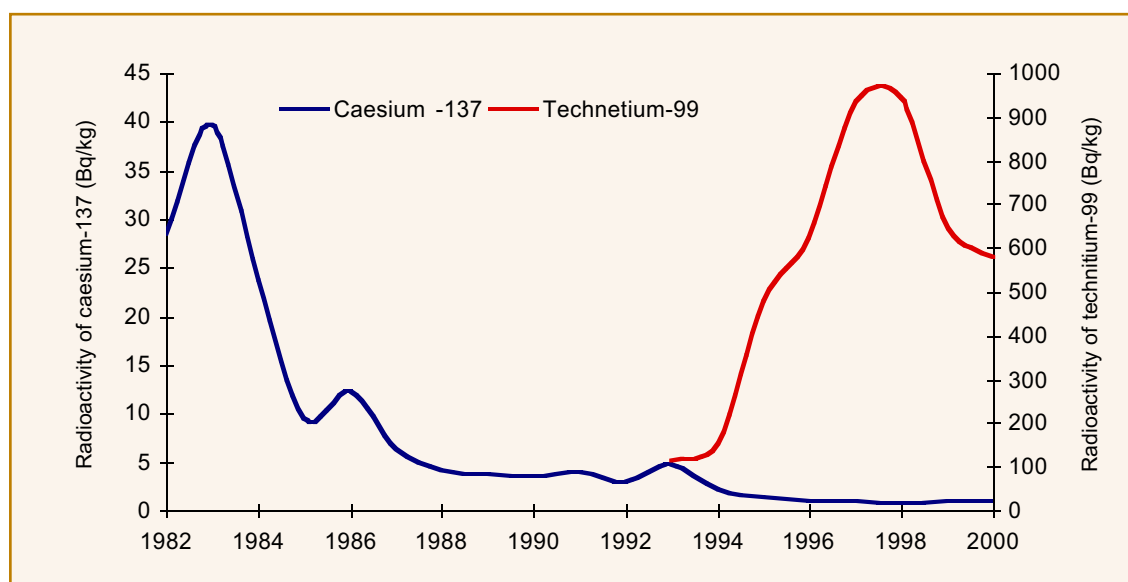
* 4 areas were classed as partly A and B; 1 as partly A, B and C; 1 as B and C

** 6 areas were classed as partly A and B; 1 as A, B and C; 1 as B and C

*** 5 areas were classed as partly A and B; 1 as A and C; one as B and C

**** 4 areas were not classified

INDICATOR 34: RADIOACTIVITY ON IRELAND'S NORTH-EAST COAST



Radioisotope (Bq/kg)	1982	1987	1992	1993	1994	1995	1996	1997	1998	1999	2000
Caesium-137	28.4	6.3	3	4.7	2.2	1.3	1	1	0.8	1	1
Technetium-99				115	153	476	622	936	945	643	577

Source: RPII

Radioactive contamination in the marine environment in Ireland arises mainly from the British Nuclear Fuels reprocessing plant at Sellafield. Levels of artificial radioactive contamination are measured in the seaweed species *Fucus vesiculosus* as a bio-indicator of soluble radionuclides in seawater. Owing to changes in processing activities, the radioisotope caesium-137 has decreased sharply, particularly over the period up to 1985. A change in re-processing techniques since 1993 led to a dramatic increase in the radionuclide technetium-99 up to 1997/98 but this has reduced somewhat subsequently.

The main pathway of artificial marine radioactive contamination to humans is seafood consumption. Overall however, seafood as a source accounts for less than one per cent of the recommended maximum dose. Because of the lower radiotoxicity of technetium-99 it contributed only approximately 15 per cent of that total dose due to radioactive contamination of Irish seafood in 1997, still significantly less than the 65 per cent contribution made by caesium-137.

The activities at Sellafield result in contamination of the Irish marine environment and exposure to the Irish population. While these doses are well below limit values and do not pose a significant health risk, any contamination of Ireland's marine environment resulting from the operations of nuclear installations in other countries is unacceptable.

INDICATOR 35: BIRDS OF CONSERVATION CONCERN

Surveys by BirdWatch Ireland and the Royal Society for the Protection of Birds identified a range of birds under threat in Ireland. Declines in bird numbers generally reflect the pressures on their habitats. The surveys identified 18 species that have been in rapid decline over the past 25 years or whose populations are much reduced over recent historical times. These are termed red list species. The amber list includes 76 species that have undergone less severe declines, with rare birds and internationally important birds of localised importance being included to this list. All other species are assigned to the green or 'no particular conservation concern' list. This new list of bird species updates the Irish Red Data Book and so presents the most recent and comprehensive data on available bird resources.

One of the most significant trends emerging from the surveys is that intensification of farming practices has greatly affected bird populations. The majority of red list species (13 of the 18) are dependent on farmland habitats for their survival. The conservation of these species requires the extension of the agri-environmental REPS scheme and positive pro-active conservation action for farmland birds under threat. Other threats to some of the red listed species may include the deterioration in water quality and increased predation.

The status of species needs frequent reassessment in order for the red and amber lists to be regularly updated. Overall conservation action is imperative to halt this decline in bird species.

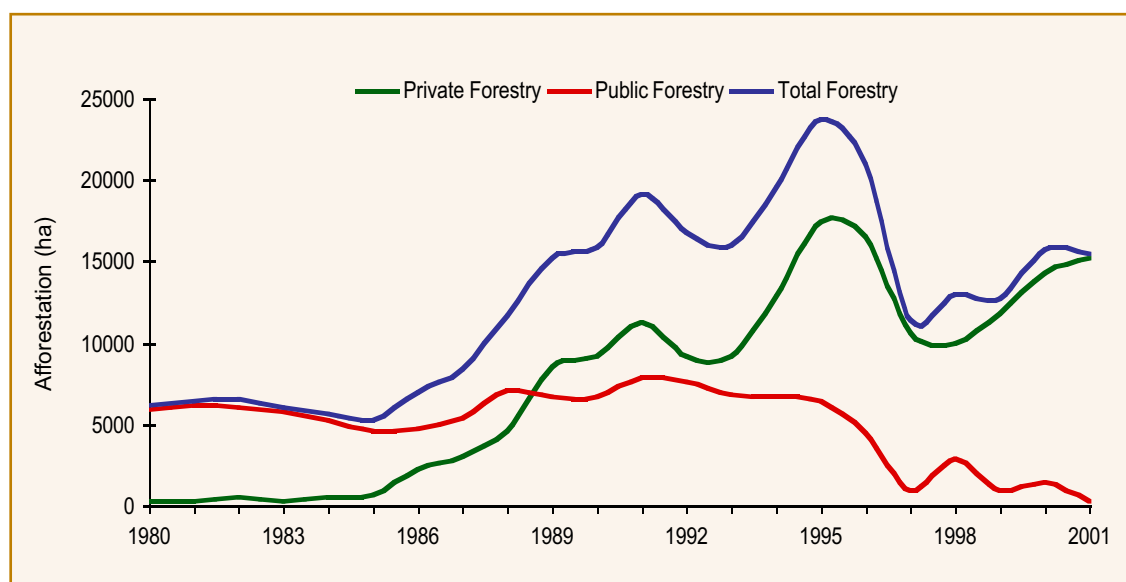
BIRDS OF CONSERVATION CONCERN*

RED LIST	Black-necked Grebe	Red-necked phalarope
	Common Scoter	Roseate Tern
	Hen Harrier	Barn Owl
	Red Grouse	Nighthawk
	Grey Partridge	Ring Ouzel
	Quail	Chough
	Corncrake	Twite
	Lapwing	Yellowhammer
	Curlew	Corn bunting

AMBER LIST	Red-throated Diver	Knot
	Black-throated Diver	Dunlin
	Great Crested Grebe	Jack Snipe
	Cory's Shearwater	Snipe
	Great Shearwater	Woodcock
	Sooty Shearwater	Black-tailed Godwit
	Manx Shearwater	Bar-tailed Godwit
	Storm Petrel	Redshank
	Leach's Petrel	Little Gull
	Gannet	Mediterranean Gull
	Cormorant	Black-headed Gull
	Little Egret	Common Gull
	Bewick's Swan	Sandwich Tern
	Whooper Swan	Common Tern
	White-fronted Goose	Arctic Tern
	Greylag Goose	Little Tern
	Brent Goose	Guillemot
	Shelduck	Razorbill
	Wigeon	Black Guillemot
	Gadwall	Puffin
	Teal	Stock Dove
	Pintail	Cuckoo
	Garganey	Short-eared Owl
	Pochard	Kingfisher
	Tufted Duck	Skylark
	Scaup	Sand Martin
	Eider	Swallow
	Goldeneye	Yellow Wagtail
	Red-breasted Merganser	Redstart
	Goosander	Whinchat
	Goshawk	Stonechat
	Merlin	Grasshopper Warbler
	Peregrine	Reed Warbler
	Water Rail	Lesser Whitethroat
	Spotted Crake	Wood Warbler
	Coot	Spotted Flycatcher
	Golden Plover	Pied Flycatcher
	Grey Plover	Redpoll

* Details of the criteria on assigning these species by category can be found in Newton et al., 2000.

INDICATOR 36: FOREST COVER



Afforestation	1980	1985	1990	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Private Forestry	268	617	9147	9134	9171	12837	17343	16555	10583	10002	11777	14231	15147
Public Forestry	5922	4625	6670	7565	6827	6622	6367	4426	851	2926	891	1464	317
Total Forestry	6190	5242	15817	16699	15998	19459	23710	20981	11434	12928	12668	15695	15464

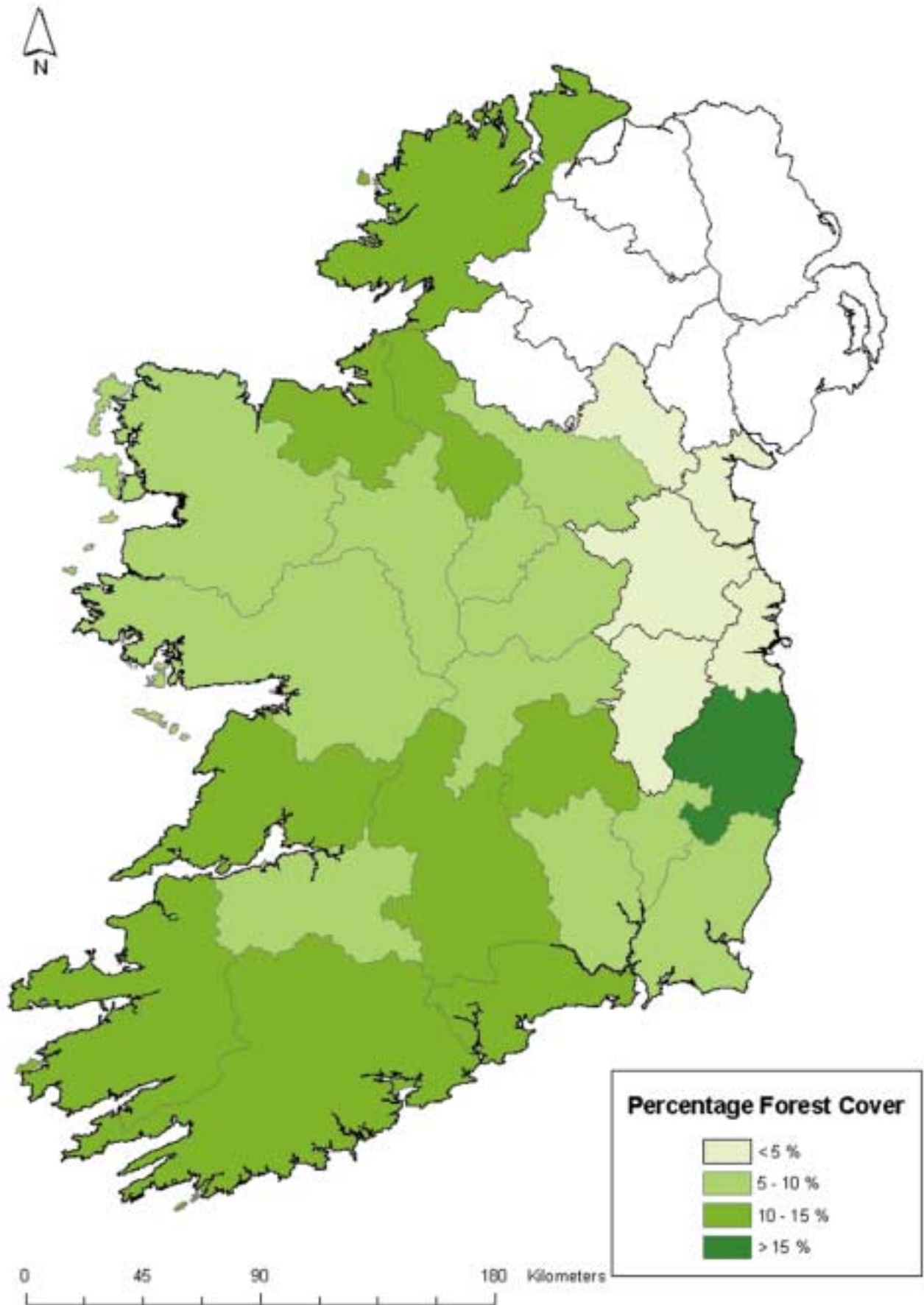
Source: Forest Service

At the start of the 20th century only one per cent of Ireland was under forest. Recent afforestation policies have significantly increased the land area under forestry and forest cover is now 9.7 per cent of national territory. While Ireland has one of the lowest levels of forest cover in the EU, where the average is 30 per cent, the recent planting rate is among the highest in Europe. The map shows the present level of forest cover in each county. National planting targets of 20,000 hectares per annum are aimed at doubling forest cover to 17 per cent by 2030.

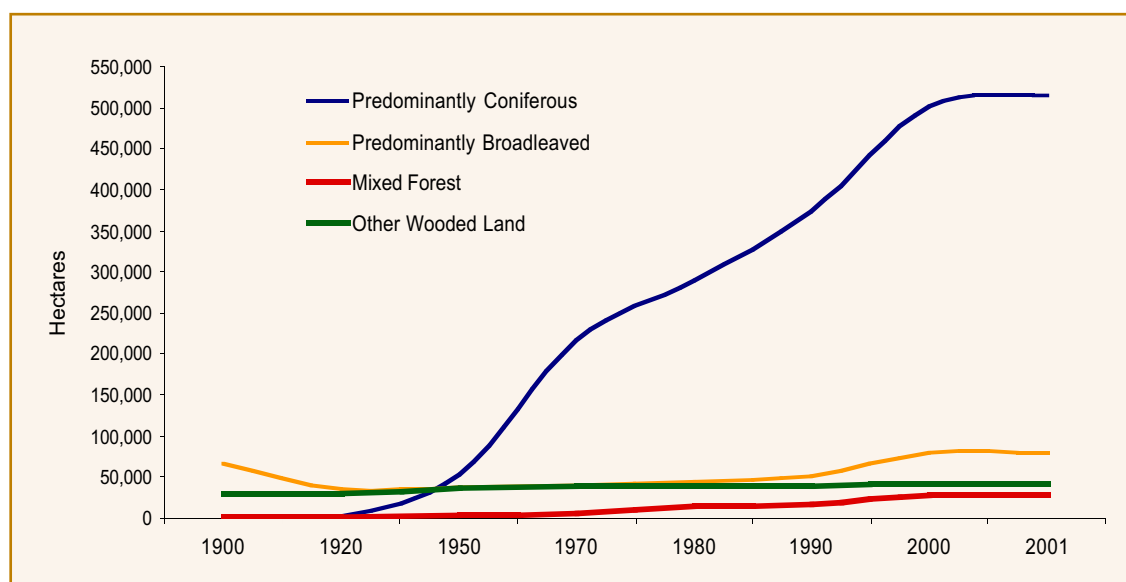
Forestry has many benefits when developed in a sensitive manner. Forests can assist in preventing soil erosion and landslip, create opportunities for recreation and tourism, and add to the social, aesthetic and wildlife value of the natural environment. Irish forests can also potentially make a significant contribution to Ireland's international obligations in limiting greenhouse gases as trees absorb carbon dioxide from the atmosphere and store it in the biomass until the eventual release as a result of burning or timber decay.

However, the benefits of forests need to be balanced against potentially adverse impacts, including visual intrusion, impacts on water courses through acidification and siltation and loss or damage to sites of archaeological or scientific interest. In relation to landscape and biodiversity, insensitively sited plantations can adversely impact on a landscape, while monoculture plantations are of limited biodiversity value.

Sustainable Forestry Management should be carried out in accordance with the recently published National Forest Standard, supported by a Code of Best Forest Practice and a suite of environmental guidelines relating to water quality, archaeology, landscape, biodiversity and the environmental impact of harvesting.



INDICATOR 37: SPECIES PLANTED IN IRISH FORESTS



	1900	1920	1950	1970	1980	1990	2000	2001
Predominantly Coniferous (ha)	3,000	3,200	52,935	216,665	290,383	373,815	502,035	515,577
Predominantly Broadleaved (ha)	65,500	34,300	37,000	39,000	45,000	50,400	78,427	80,350
Mixed Forest (ha)	1,500	1,500	5,000	7,500	15,000	17,000	28,350	28,350
Other Wooded Land (ha)	30,000	31,000	38,000	39,000	40,000	40,000	41,000	41,000

Source: Forest Service

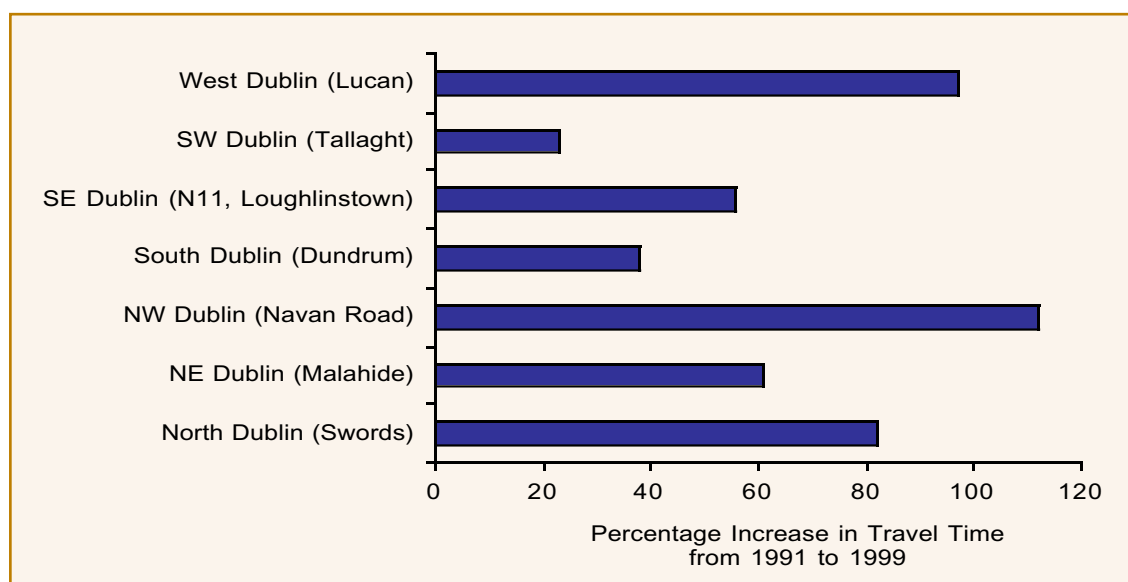
Mixed woodlands were once a natural feature of the Irish landscape. However, in seeking to rapidly expand forest cover, for commercial purposes, forest policies in Ireland have favoured the planting of fast-growing, coniferous species such as Sitka Spruce.

Currently about 77 per cent of Irish forests consist of coniferous species with over 50 percent being of the Sitka Spruce variety. Monoculture plantations of coniferous trees are of limited biological diversity value and can impact adversely on the rural landscape. Alternatively, the inclusion of native and broadleaf species in Irish forests such as beech, oak and sycamore has particular value in terms of landscape, heritage, amenity and habitats. Current forest policy sets an annual target for broadleaf afforestation of 20 per cent of total annual afforestation.

In relation to the absorption of carbon dioxide by forests, indications are that relatively fast growing conifers can store carbon rapidly over the short term, while slower growing broadleaf species act as longer term carbon stores.

Overall, appropriate forest design incorporating open spaces, woodland edges, various structures and a proportion of broadleaf and newly planted trees, supports greater biological and landscape diversity.

INDICATOR 38: JOURNEY TIMES IN DUBLIN



Area	Percentage increase	Area	Percentage increase
North Dublin (Swords)	82	SE Dublin (N11, Loughlinstown)	56
NE Dublin (Malahide)	61	SW Dublin (Tallaght)	23
NW Dublin (Navan Road)	112	West Dublin (Lucan)	97
South Dublin (Dundrum)	38		

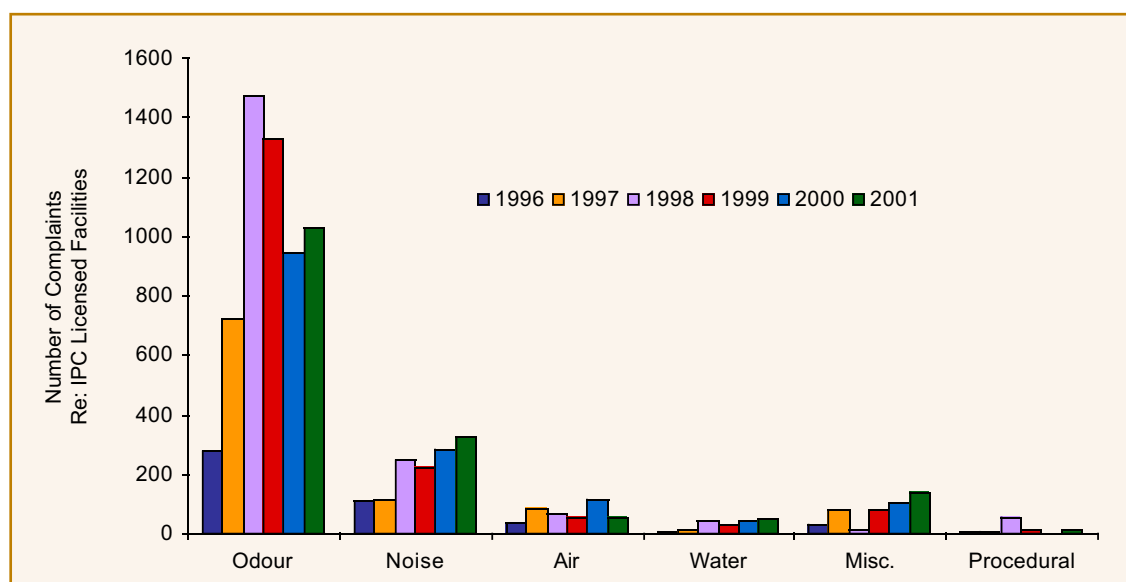
Source: Dublin Transportation Office

The main factors influencing increases in traffic are economic growth, increases in population, the number of households, the number of people at work and the resulting growth of car ownership and use. All of these factors have shown major increases in recent years, with the result that travel times for commuters have increased for all parts of Dublin over the 1990s. This is a highly relevant indicator and more frequent updating is desirable.

Areas with the greatest increases in journey times are along the Navan Road and in the Lucan area. The South and South West of Dublin show a lower increase in travel times, as car usage was already significant in these areas in 1991. Overall, continued growth in road transport in all urban areas including Dublin is unsustainable. The road infrastructure cannot expand indefinitely to cope with increasing car ownership and usage. Society's demand for mobility results in increased noise in urban areas, rising fuel consumption and associated problems of air pollution.

The full implementation of the Dublin Transportation Office (DTO) Strategy "A Platform for Change" is vital to provide an integrated transportation system for the Greater Dublin Area. This strategy seeks to provide a viable alternative in the form of a much-improved public transport system and also to reduce the demand for private car travel. This integrated structure involves the development of a metro, LUAS, suburban rail network, quality bus corridors (QBCs), the port tunnel, cycle tracks, pedestrian facilities, strategic roads, the DART and bus services. Other principal components of the strategy are measures to improve the integration and attractiveness of the public transport network, including park and ride facilities, integrated fares and ticketing, quality interchange facilities, improved passenger information and road user/car park charging schemes.

INDICATOR 39: NOISE AND ODOUR COMPLAINTS



Year	Odour	Noise	Air	Water	Misc.	Procedural
1996	279	109	39	6	28	5
1997	722	115	85	15	80	9
1998	1475	248	65	42	13	54
1999	1330	223	55	32	79	14
2000	942	280	112	43	102	3
2001	1,028	324	53	47	137	12

Source: EPA

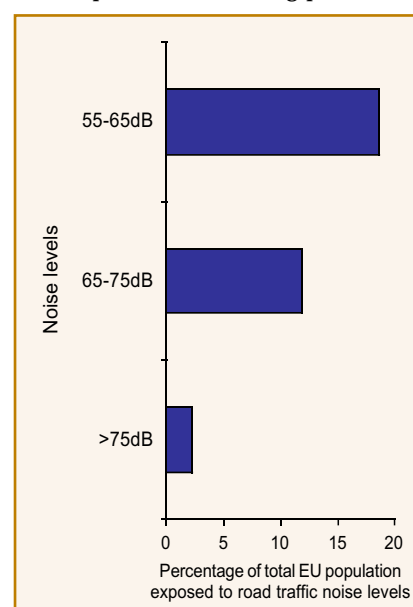
For many people environmental degradation manifests itself as a nuisance, annoyance and irritation, in particular through excessive noise and offensive odours. Offensive odours give rise to more public concern and complaints than any other aspect of air quality in Ireland.

Offensive and nuisance odours are usually associated with activities such as slurry spreading, wastewater treatment plant and rendering operations, particularly if these are not undertaken properly. Other farming operations, chemical and pharmaceutical industries and some synthetic board manufacturing also generate odour complaints. Rendering plants tend to be the overall most common causes of odour complaints.

Causes of noise pollution include road and rail traffic, aviation, industry and construction. In particular road traffic noise can seriously affect both living and working conditions, especially in urban areas. The causes of noise complaints vary, some relate to night-time noise from large industrial plants while some relate to tonal or impulsive noises. The EPA is the regulating body in the case of noise and odours emanating from industries controlled by the Integrated Pollution Control (IPC) licensing system. For other activities complaints should be directed to the local authority.

The total number of complaints from the public in relation to IPC licensed facilities in 2001 was 1601. Over 64 per cent and 20 per cent of the complaints related to odour and noise, respectively.

Under the IPC licensing system, facilities are required, where necessary, to carry out abatement measures to reduce odour and noise emissions from the activity. Good management practices and proper operation of abatement equipment can improve the situation in most facilities.



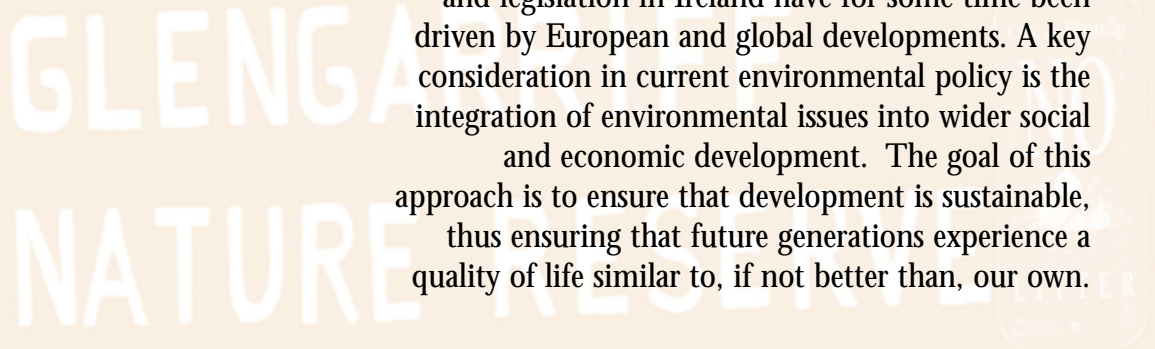
Source: EEA

See Indicators 6, 8, 9, 40

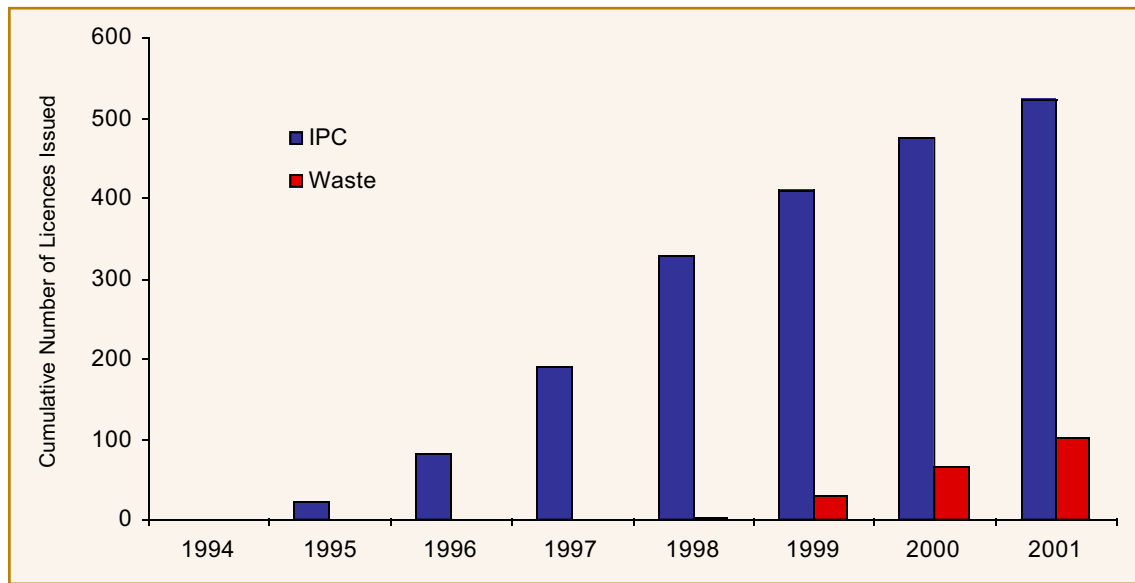
Environmental Protection and Management

Where problems exist with environmental quality, responses are required to address these problems.

These responses should aim at protecting environmental quality and, where there is evidence of degradation, at improvement. Environmental policy and legislation in Ireland have for some time been driven by European and global developments. A key consideration in current environmental policy is the integration of environmental issues into wider social and economic development. The goal of this approach is to ensure that development is sustainable, thus ensuring that future generations experience a quality of life similar to, if not better than, our own.



INDICATOR 40: IPC AND WASTE LICENCES



Year	1994	1995	1996	1997	1998	1999	2000	2001
IPC	1	21	82	191	327	409	474	522
Waste				0	3	30	66	101

Source : EPA

In Ireland industrial and manufacturing activities with significant pollution potential are controlled through the Integrated Pollution Control (IPC) licensing system operated by the EPA. Since the introduction of IPC licensing in 1994 there has been a steady growth in the number of companies controlled through IPC. By the end of 2001 a total of 629 IPC licence applications had been made to the Agency, with 522 licences issued.

In 1997, the EPA was given the responsibility of licensing waste activities. By the end of 2001 a total of 187 applications for a waste licence had been made to the EPA with 101 licences being issued. Ultimately, all significant waste disposal and recovery activities will require a licence from the EPA. This includes landfill sites, transfer stations, storage facilities, hazardous waste disposal and recovery facilities, large composting facilities and certain types of treatment facilities.

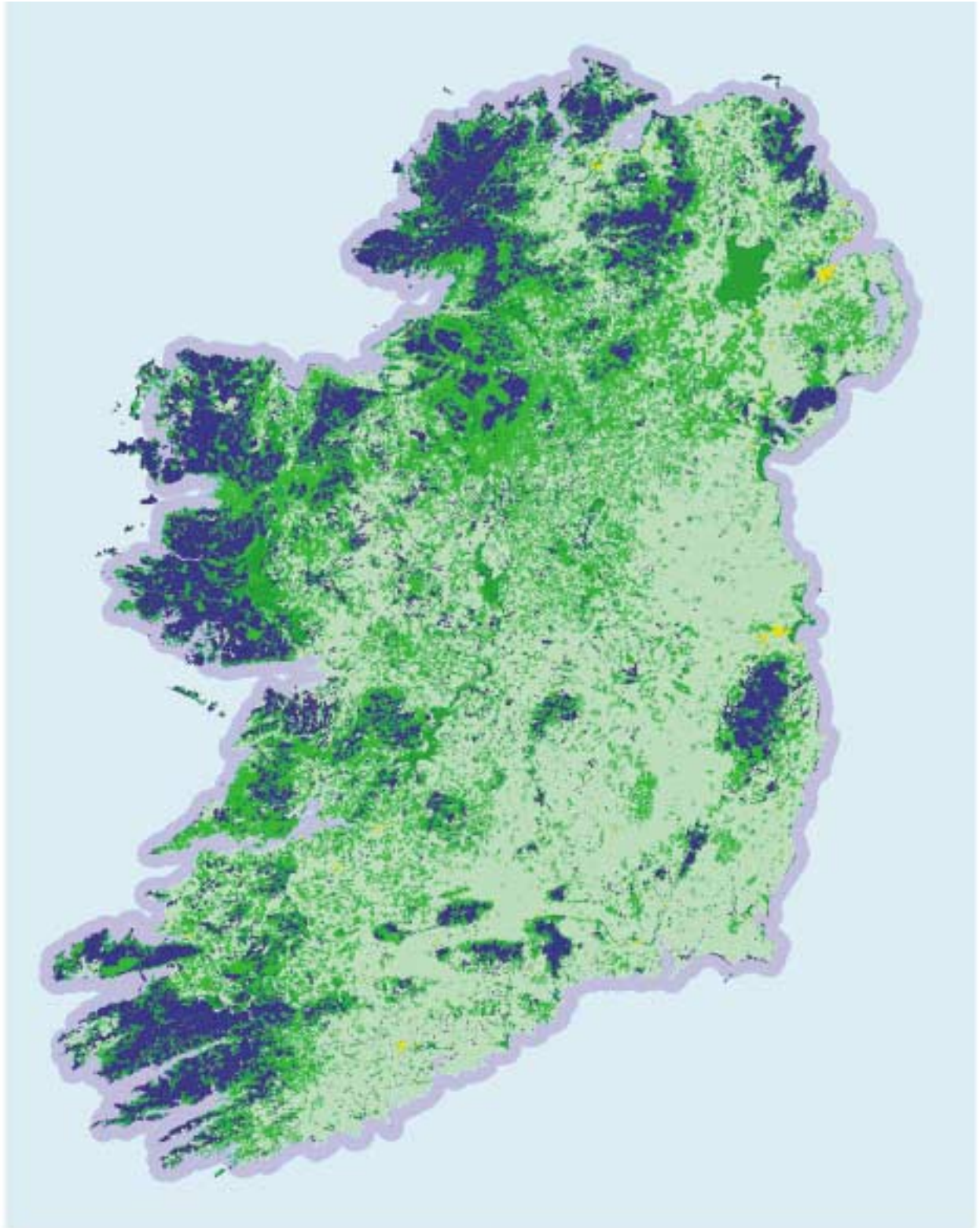
Because of the nature of waste activities, in particular landfills, the EPA has the power to control the entire lifecycle, from the construction phase through to closure and aftercare. Both IPC and waste licences require operations to comply with strict emission limits and require the implementation of an environmental management system for continued improvements in environmental performance. Licensees are also required to prepare Annual Environmental Reports, which in conjunction with independent assessment by the EPA, provide detailed information on the environmental performance of the activity.







INDICATOR 41: ECOLOGICAL NETWORK AND SPATIAL PLANNING

In Ireland the approach to nature conservation and management focuses mainly on the protection of particular priority species and habitats as laid down by various EU Directives. There is increasing awareness of the need to identify and manage areas outside of the main protected sites which are of significance for biodiversity. One such approach is the concept of an Ecological Network, similar to approaches used by landscape planners, to integrate biodiversity and landscape planning. Its principal constituents are 'core areas' of high biodiversity value, and 'corridors' or 'stepping stones' which are the linkages between the core areas. The development of ecological networks seeks to maximise the value of the linkages and to prevent or minimise the impact of new barriers to them, such as roads or other infrastructural projects.


A recent EPA funded research project examined how the ecological network approach could support the conservation of particular aspects of biodiversity, terrestrial and marine habitats, flora and mammals in Ireland. The ecological network approach involved an overview of the biodiversity value of all land within the entire country, something that has not been done before. Utilising existing land cover and habitat information, five types of areas were defined on the basis of naturalness and biodiversity value. Class one areas are highest in naturalness and contain areas of priority importance for biodiversity. Class five areas, while still having a biodiversity value, tend to be areas of local ecological significance. In general designated sites and proposed areas for designation under EU Directives are within classes one and two. However, this study includes values for the land cover types not included in the present designation system and which could potentially act as corridors and stepping-stones. The outcome of the study identified biodiversity as an important resource which is present throughout the country and is of high quality over large areas.

Biodiversity must be an integral component of national spatial planning. While this preliminary national ecological framework can be further tested and elaborated, preferably in tandem with landscape characterisation studies, it provides an initial overview of the distribution of ecologically important areas, both large and small.

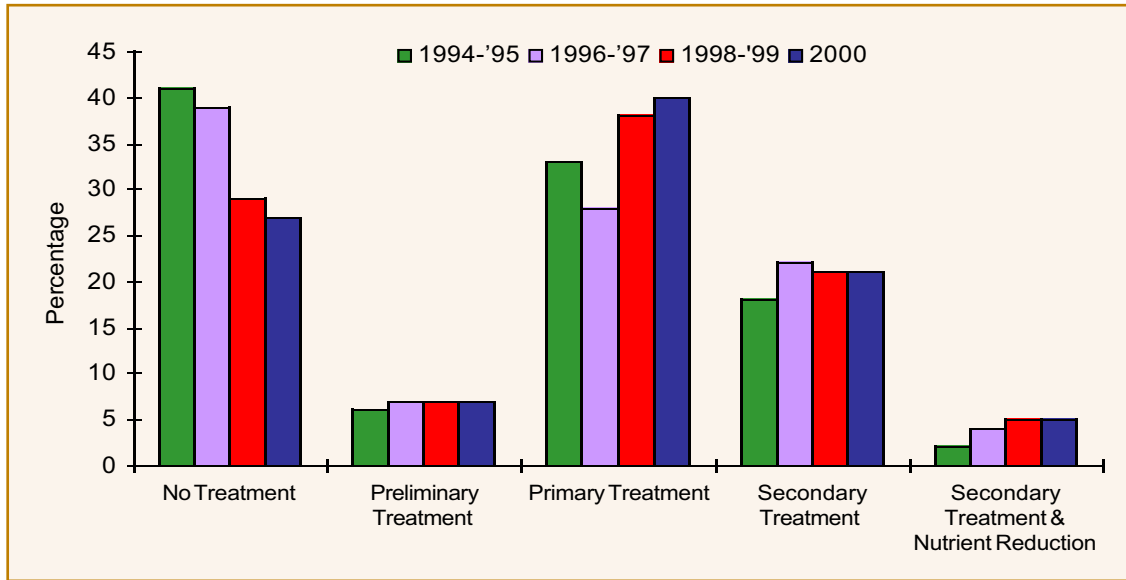


- Econet Classes**
-  Class 1
 -  Class 2
 -  Class 3
 -  Class 4
 -  Class 5
 -  Nearshore

50 0 50 100 Kilometers



INDICATOR 42: URBAN WASTE WATER TREATMENT



	1998-'99	2000
No Treatment %	29	27
Preliminary Treatment %	7	7
Primary Treatment %	38	40
Secondary Treatment %	21	21
Secondary Treatment & Nutrient Reduction %	5	5

Source: EPA

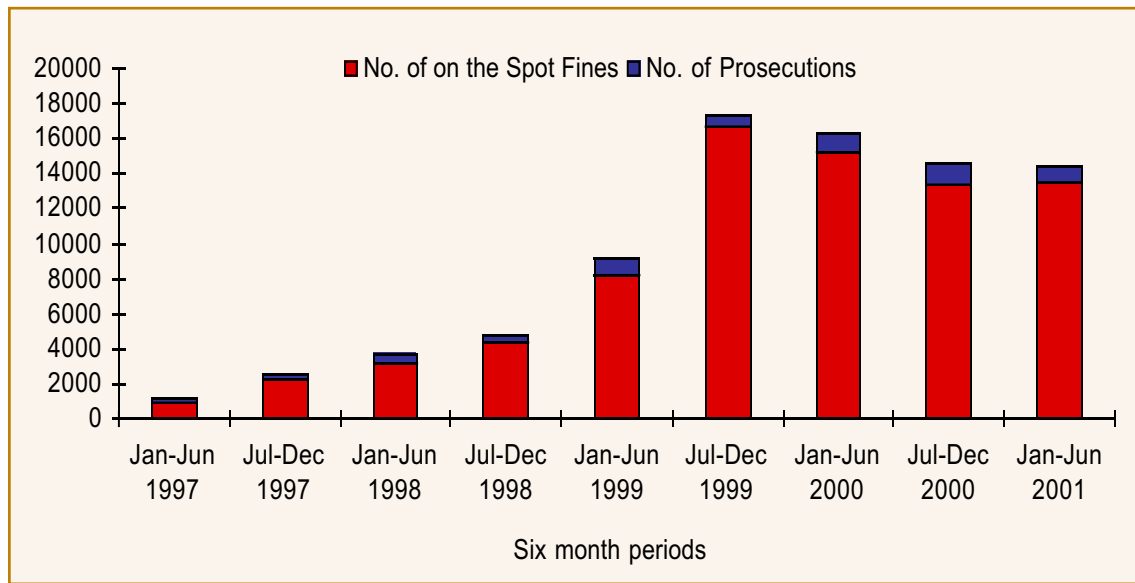
Urban waste water is domestic waste water or its mixture with industrial waste water and / or runoff rainwater. The low population density and dispersed nature of urban settlements in Ireland significantly influence both the location and the volume of urban waste water discharges. Approximately 60 per cent of waste water arising in Ireland emanates from just five agglomerations – Ringsend, North Dublin, Cork, Dundalk and Waterford. Normally collected waste water is sent to treatment plants before discharge to rivers, lakes, estuaries or coastal waters. However, the level of treatment can vary from none to advanced treatment.

Although the quantity of waste water has increased in recent years, the breakdown of the various levels of treatment of urban waste water shows that between 1994 and 2000 there has been a significant drop in the amount of waste water not receiving any form of treatment. Currently, approximately 47 per cent of waste water receives preliminary or primary treatment, while 21 per cent receives secondary treatment and a further five per cent receives nutrient reduction (tertiary) in addition to secondary treatment.

Within the next few years it is anticipated that all significant urban waste water discharges will receive secondary treatment in accordance with the requirements of the EU urban waste water treatment Directive. In particular, the Ringsend treatment plant, which has a population equivalent of 1.8 million persons, is due to be fully operational by 2003.

In contrast to the collection and treatment of urban waste waters, septic tanks remain the main form of waste water management in rural Ireland. However, many septic tanks do not function as intended, owing to problems with location, construction and maintenance. Recommended frequency for desludging septic tanks is a minimum of once per year but this is rarely adhered to.

INDICATOR 43: LITTER FINES AND PROSECUTIONS



Controls on Litter	Jan-Jun 1997	Jul-Dec 1997	Jan-Jun 1998	Jul-Dec 1998	Jan-Jun 1999	Jul-Dec 1999	Jan-Jun 2000	Jul-Dec 2000	Jan-Jun 2001
No. of on the Spot Fines	981	2277	3175	4388	8277	16729	15250	13404	13453
No. of Prosecutions	146	184	507	396	859	646	1076	1202	1003

Litter is still a significant problem in Ireland particularly in towns and cities. The impact of litter is detrimental to tourism and damages the aesthetic quality of the environment.

Local authorities are increasingly taking a more pro-active approach to combat the problem of litter using their extensive management and enforcement powers under the Litter Pollution Act, 1997. The number of on-the-spot fines and prosecutions for litter violations has increased dramatically since the introduction of the Act. However, the number of fines and prosecutions reflects not just the response to the problem but also the extent of the problem. Litter hotspots have been highlighted as including bus stops, secondary schools, third level institutions, fast food outlets, construction sites, recycling centres and beaches. A major problem is litter thrown from cars affecting the margins of roads close to cities and towns.

The resolution of this national litter problem requires a change of individual attitudes and a heightened sense of civic responsibility. To achieve this there is a need for greater use of penalties as well as ongoing education. The recent introduction of the levy on plastic bags should result in a significant reduction in this type of litter.

INDICATOR 44: RURAL ENVIRONMENTAL PROTECTION SCHEME

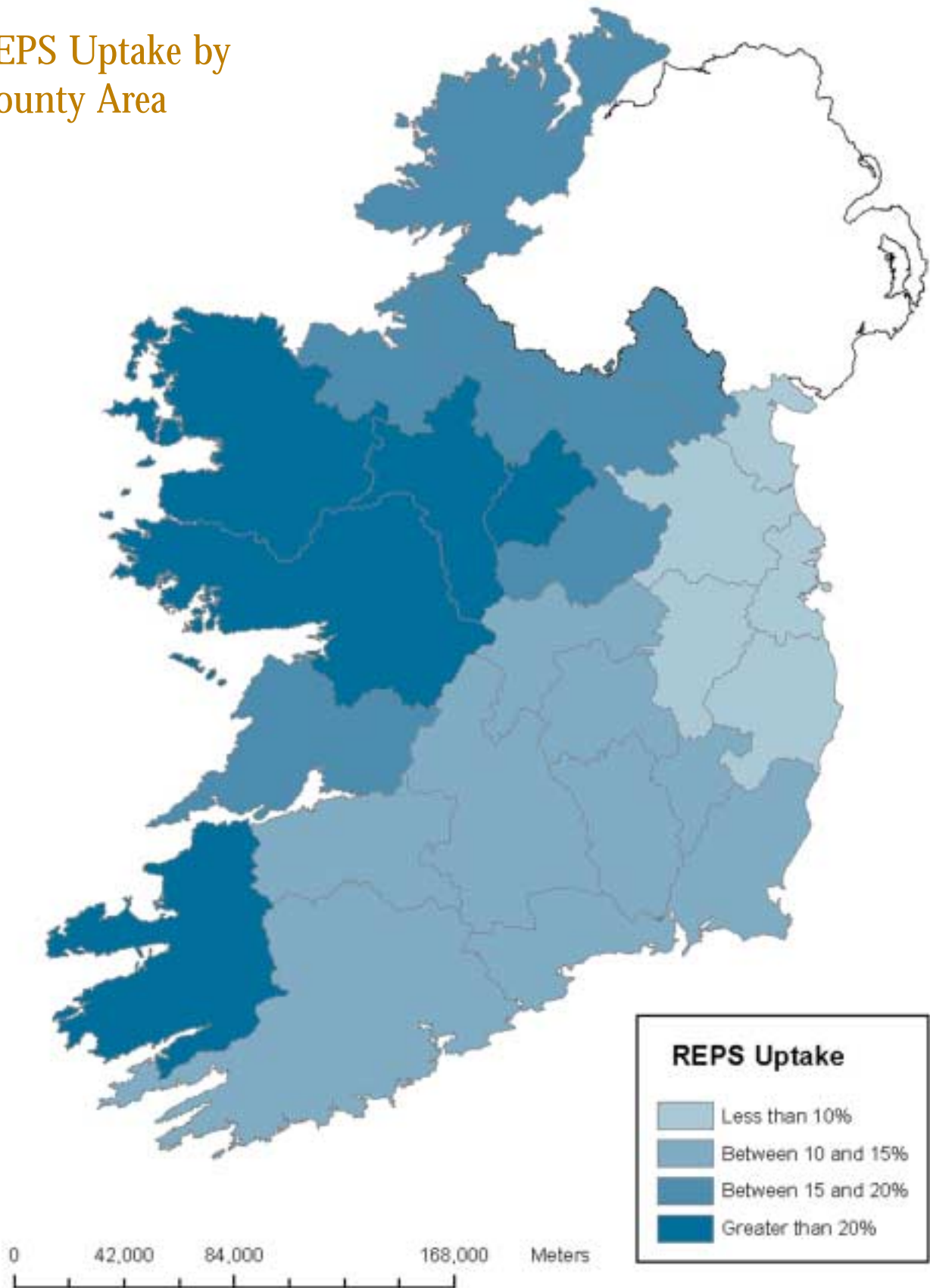
It is widely acknowledged internationally that inappropriate agricultural activities can damage the environment. In Ireland, the Rural Environment Protection Scheme (REPS) is the main countrywide agri-environmental incentive scheme. The scheme provides financial incentives to farmers who engage in environmentally sensitive farming. This scheme is now one of the principal mechanisms for protecting wildlife habitats. The removal of hedgerows, stonewalls, field boundaries, woodland, wetlands and other habitats is prohibited in REPS.

Since the launch of the REPS in 1994, over 45,000 farmers have joined the scheme. Currently approximately 27 per cent (or 1.18 million hectares) of the utilisable agricultural area is being farmed under REPS guidelines. Despite this, statistics show that participation is higher among the smaller extensive farmers in the west and north west of Ireland. Large-scale intensive farming activities, which potentially have the greatest impact on the environment, are significantly under-represented in REPS.

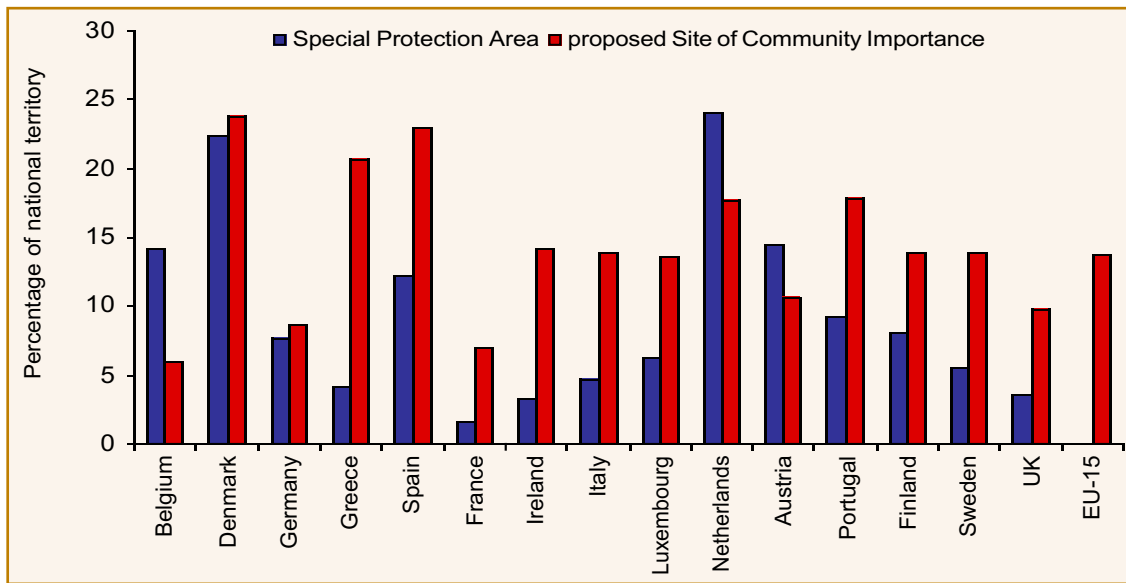
Ideally, environmental objectives should be an integral part of all relevant agricultural grant schemes. Cross-compliance between REPS and the Headage and Ewe Premium Schemes, particularly in areas degraded by overgrazing, is a requirement since 1998.



REPS Uptake by County Area



INDICATOR 45: NATURE PROTECTION



	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK	EU-15
SPA	14.1	22.3	7.6	4.1	12.2	1.6	3.2	4.6	6.2	24.1	14.4	9.2	8.1	5.5	5.4	
pSCI	5.9	23.8	8.7	20.7	22.9	6.9	14.1	13.8	13.6	17.7	10.6	17.9	13.9	13.9	9.7	13.7

Source: Nature Conservation Unit of European Commission

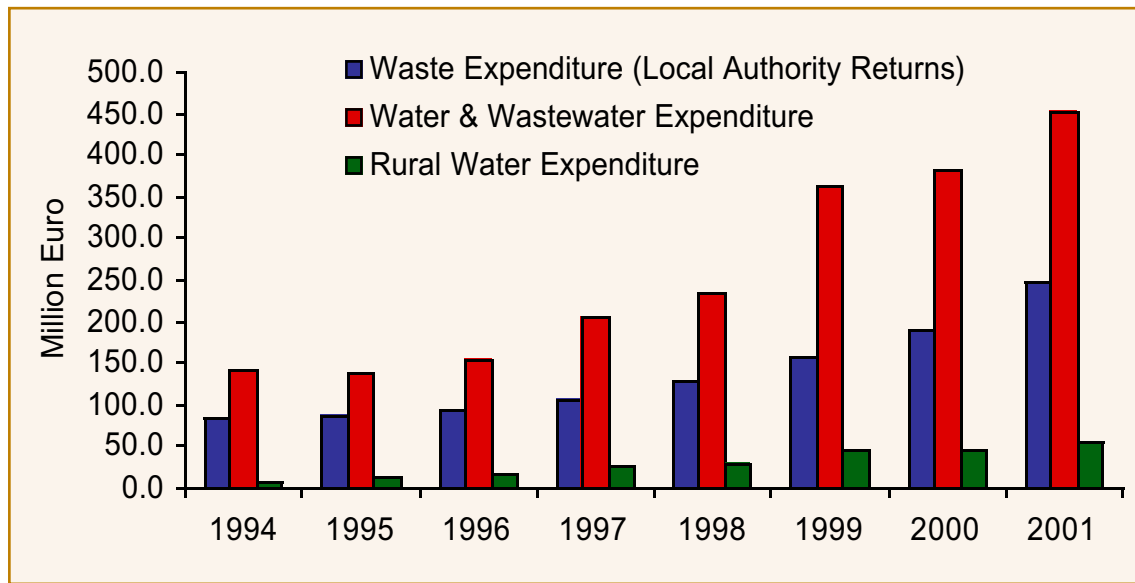
The EU birds and habitats Directives are very significant legislative developments concerning nature conservation and protection. The EU birds Directive requires each Member State to designate Special Protection Areas (SPAs) for birds. The Directive contains lists of birds that require particular conservation measures such as the Whooper Swan, Greenland White-fronted Goose, Peregrine Falcon, Corncrake and Terns. There is also a requirement to protect sites that are important for migratory species such as ducks, geese and waders.

The EU habitats Directive provides for the establishment of a coherent ecological network of protected areas across the 15 Member States. The designation process for the Directive involves the selection of national sites, the establishment of a list of proposed Sites of Community Importance (pSCI) and finally the formal designation of this adopted list as Special Areas of Conservation (SAC). The establishment of this network of sites, known as NATURA 2000, aims at integrating nature protection requirements into other EU policies such as agriculture, regional development and transport. Priority Irish habitats for NATURA 2000 include raised bogs, active blanket bogs, turloughs, machair, heaths, lakes and woodlands.

By 2001, Ireland had transmitted 364 candidate SACs and 109 SPAs to the EU, representing over 14 per cent and 3 per cent of national territory respectively*. With increasing economic growth many pressures are being placed on our natural environment – from agriculture, tourism, industry and urban sprawl - the challenge now is to minimise impacts and to conserve natural habitats. In this context the full implementation of the National Biodiversity Plan 2002 is important.

* As of 11/04/2002. The Nature Conservation Unit of the European Commission states that "the percentage in surface area is indicative. It relates to the total surface area, terrestrial and marine, in relation to the terrestrial surface of Member States".

INDICATOR 46: EXPENDITURE ON ENVIRONMENTAL SERVICES



Investment (million €)	1996	1997	1998	1999	2000	2001
Waste Expenditure (Local Authority Returns)	92.1	104.8	128.9	157.8	188.0	246.2
Water & Wastewater Expenditure	155.4	206.2	234.8	363.4	380.3	453.2
Rural Water Expenditure	14.6	25.6	28.3	46.1	44.9	53.5

Source: DELG

General economic growth, increased residential development and growth in tourism and other economic sectors have increased demand for water services and for waste water treatment facilities. Major capital investment in water and sanitary services infrastructure has been necessary to meet these demands and to achieve national and EU environmental requirements.

Total capital investment in water and sanitary services in the period 1994 to 2001 amounted to over €2071 million, with the bulk being co-financed by EU Structural and Cohesion Funds. A total of €453.2 million was invested in these services in 2001. In addition, local authorities must also fund operating and maintenance costs associated with the water and sewerage schemes.

Reports on the quality of drinking water in Ireland indicate that private group and small private supplies are more at risk from pollution. Under the Rural Water Programme a number of initiatives have been taken aimed at improving the quality of these supplies. In 2001, expenditure amounted to over €53 million.

Expenditure in 2001 in waste collection and disposal services delivered by local authorities is estimated at €246 million. The costs associated with waste management is expected to continue to rise to meet the modern standards and requirements under the waste management licensing system operated by the Environmental Protection Agency.

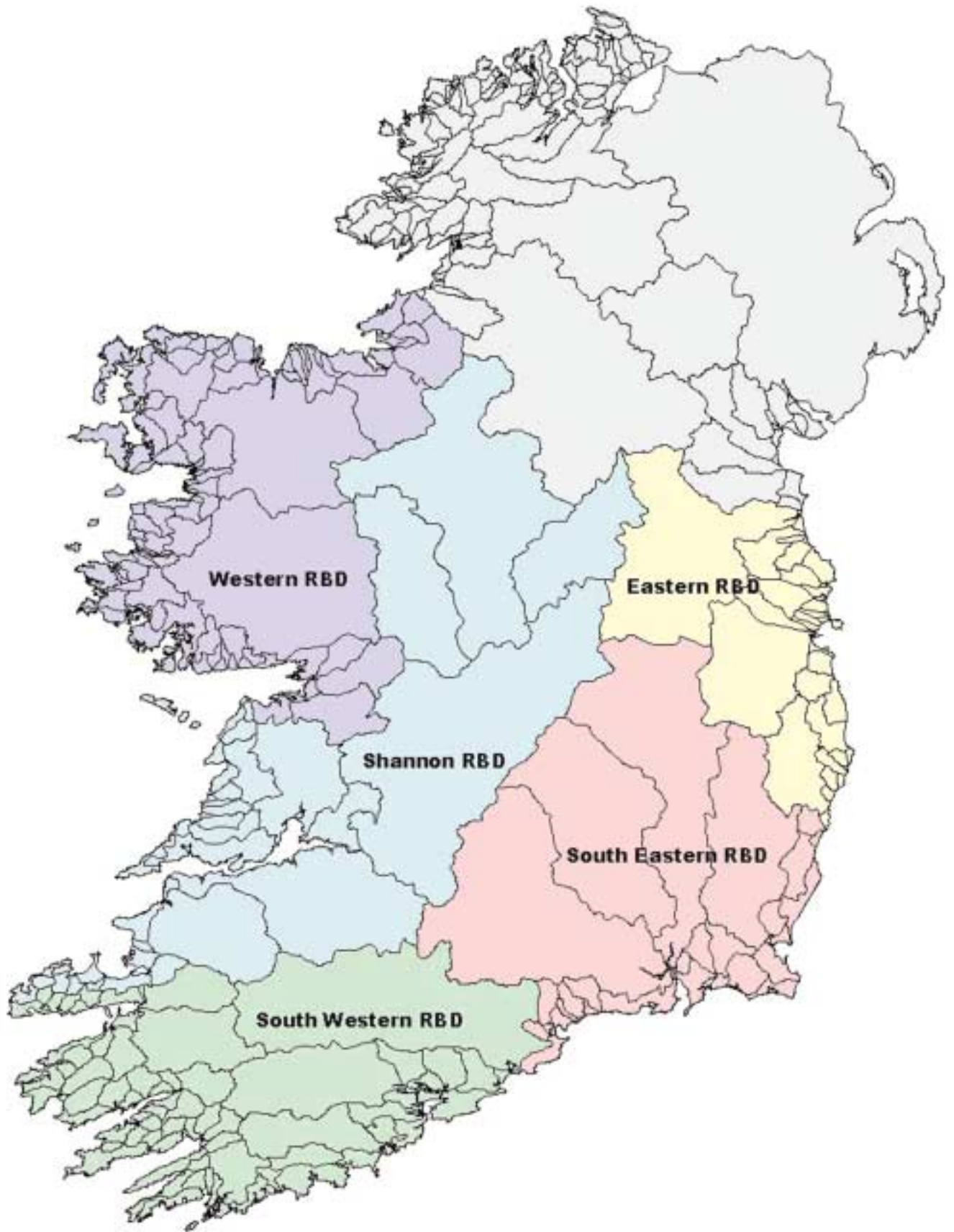
INDICATOR 47: WATER FRAMEWORK DIRECTIVE

The EU water framework Directive (WFD) rationalises all EU water legislation and its full implementation will be a major policy challenge for all EU Member States, including Ireland. It provides for a more systematic and integrated approach to controlling water pollution by incorporating a range of measures to protect and restore water quality.

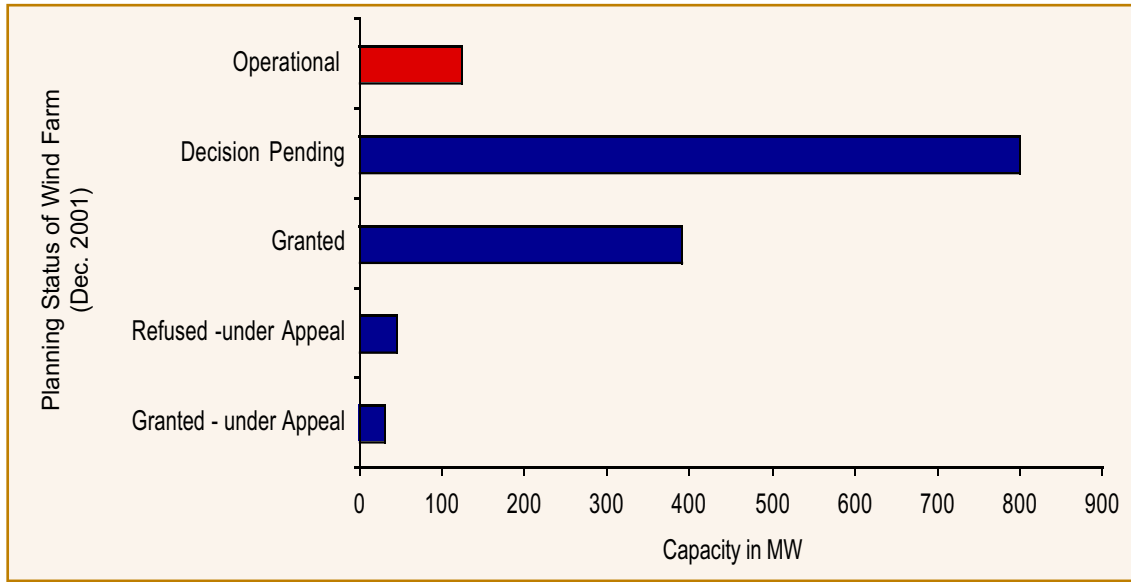
Key features of the Directive include:

- the requirement for EU Member States to attain 'good' surface water and groundwater status by 2015;
- the prevention of further deterioration of all waters and provision for protection and enhancement of aquatic ecosystems and their associated terrestrial ecosystems;
- the establishment of a common approach across Europe to protecting groundwaters and surface waters;
- a requirement to manage waters at a River Basin District (RBD) level with an emphasis placed on the ecological, physical and chemical quality.

To date, Ireland is considering proposing five RBDs (see map) with the cross border RBDs under discussion and yet to be agreed. The management of each RBD will involve all stakeholders including statutory and regulatory authorities, NGOs, sectoral interests and recreational users. The overall implementation of the water framework Directive will involve a high degree of co-ordination and partnership between public authorities in conjunction with extensive public consultation in order to tackle the challenge of water protection. The Directive requires the development of a river basin management plan for each RBD which will include an analysis of pressures and impacts within the RBD and the development of a comprehensive programme of measures for the achievement of the Directive's objectives.



INDICATOR 48: RENEWABLE ENERGY



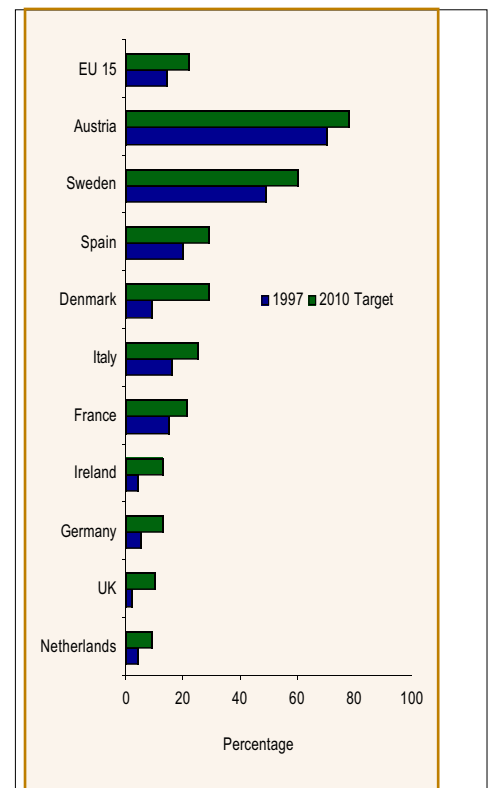
Wind Energy (MW):	Granted - under Appeal	30
	Refused -under Appeal	45
	Granted	391
	Decision Pending	800
	Operational	125

Source: Irish Energy Centre

Concomitant with economic growth, Ireland is consuming ever increasing amounts of energy for heating, transport and electricity generation. Most of this energy is derived from fossil fuels such as gas, oil, coal and peat, which are finite resources. At present, renewable energy provides only 1.8 per cent of the total primary energy requirement in Ireland. Renewable energy sources such as the sun, wind and water power can make a significant contribution to meeting Ireland's energy needs and international obligations in relation to emissions of greenhouse gases and acidifying gases, sulphur dioxide and nitrogen oxides.

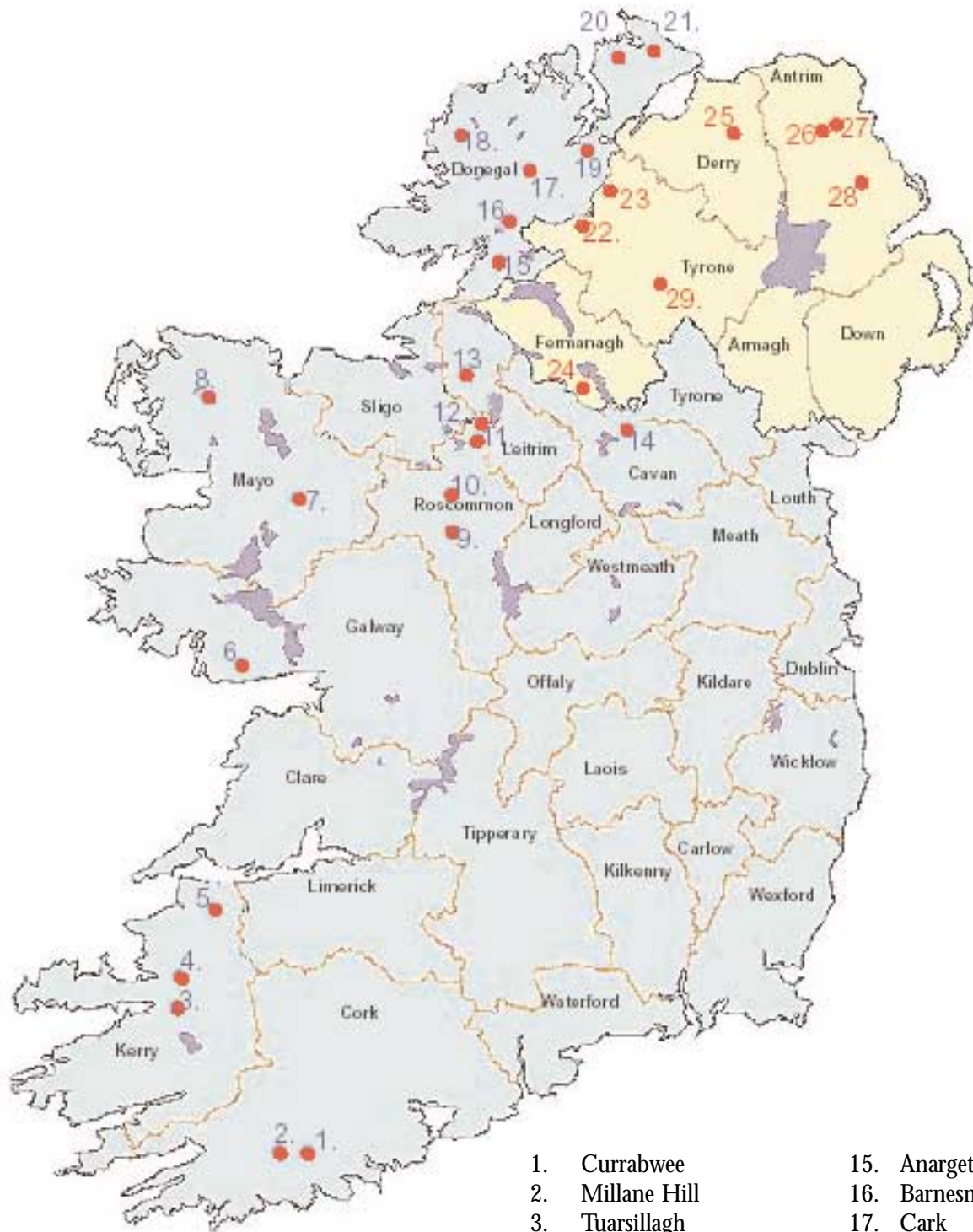
Ireland has one of the best wind resources in Europe and renewable wind energy can be harnessed to produce electricity. Some 21 wind farms are now in operation around the country (see map), providing a combined generating capacity of 125 MW into the national electricity grid. Planning permission has been granted for further wind energy developments totalling 391 MW, with a further 75 MW under appeal to An Bord Pleanála. An additional 800 MW is currently going through the planning process. Proper design and site selection, appropriate planning conditions and consultation are essential to reduce local impacts of wind turbines.

The EU renewable electricity Directive (2001/77/EC) sets an overall EU target of 22 per cent of total electricity consumption to come from renewable energy by 2010. Renewable energy sources contributed 14 per cent of the EU's gross electricity consumption in 1999 and substantial growth is necessary in several countries to achieve the targets.



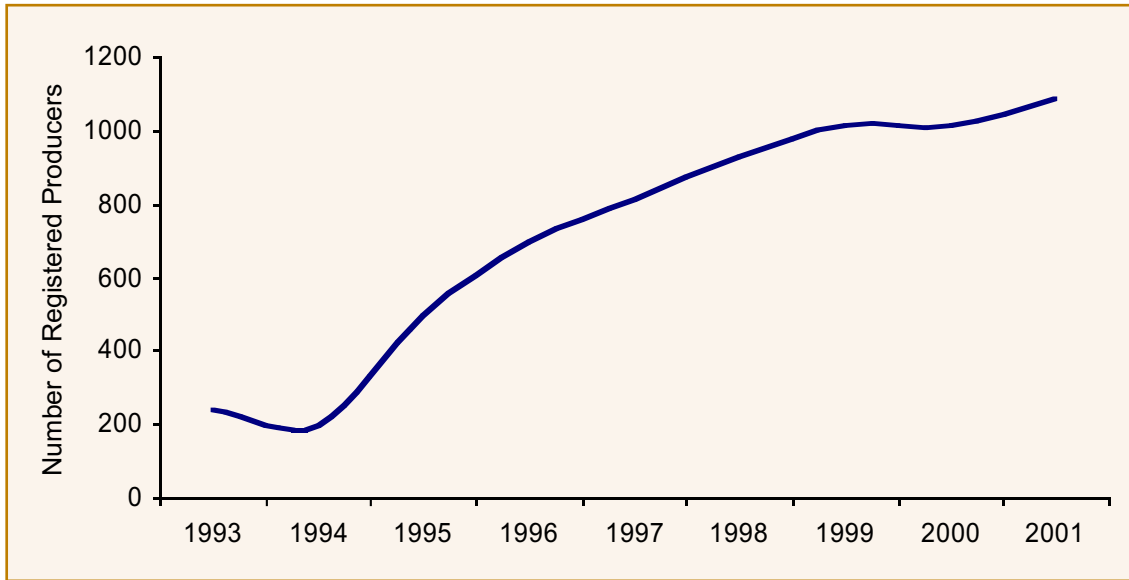
Source: EC

See Indicators 10, 11



- | | |
|---------------------|----------------------|
| 1. Currabwee | 15. Anarget |
| 2. Millane Hill | 16. Barnesmore |
| 3. Tuarsillagh | 17. Cark |
| 4. Beenageeha | 18. Gweedore |
| 5. Beale Hill | 19. Cuillagh |
| 6. Inverin | 20. Crockahenny |
| 7. Lenanavea | 21. Dromlough Hill |
| 8. Bellacorick | 22. Bessy Bell |
| 9. Largan Hil | 23. Owenreagh |
| 10. Kilonan | 24. Slieve Rushen |
| 11. Spionkop | 25. Riggid Hill |
| 12. Corrie Mountain | 26. Slievenamanaghan |
| 13. Black Banks | 27. Corkey |
| 14. Corneen | 28. Lendrum's Bridge |

INDICATOR 49: ORGANIC FARMING



	1993	1994	1995	1996	1997	1998	1999	2000	2001
No. of Registered Organic Producers	238	195	496	694	808	923	1012	1014	1083

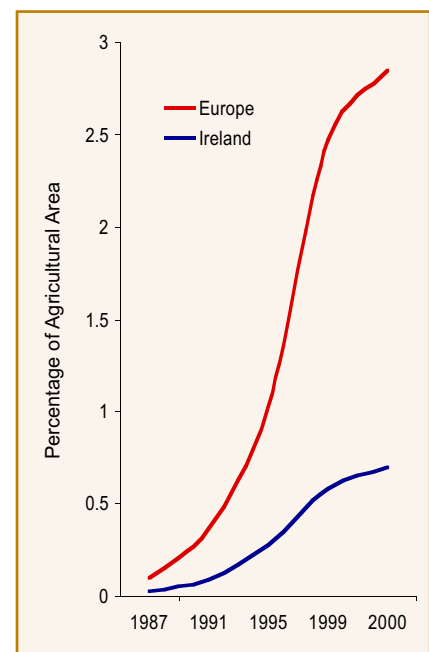
Source: DAFRD

Organic farming is an environmentally sustainable approach to reducing environmental pressures of agriculture. This system of farming avoids the use of artificial fertilisers and pesticides, adopts animal welfare measures and employs less intensive management practices in order to minimise the risks of water pollution and the impacts on biodiversity and soil quality.

Although the share of agricultural land devoted to organic farming is rising, there is still a relatively low uptake nationally at approximately 30,000 hectares (0.7 per cent of total agricultural area). Some 1,083 food producers are engaged in this form of agricultural practice in Ireland.

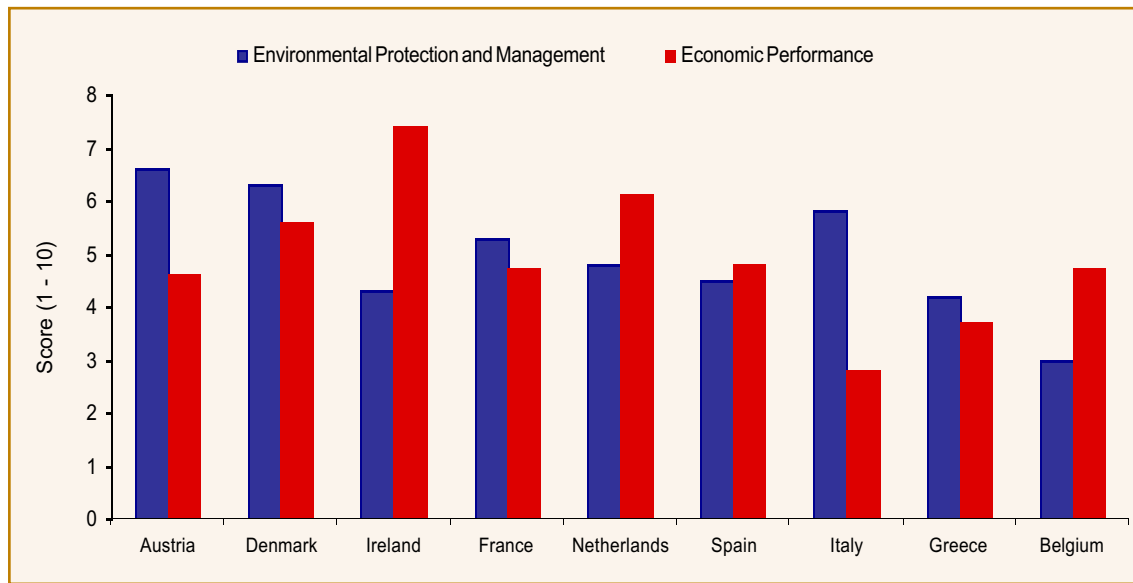
Almost 3 per cent of the agricultural area in Europe is now farmed organically and the proportion of land under organic farming is predicted to rise substantially in the future. The European Commission is at present formulating an organic farming strategy aimed at increasing the share of organic farming in the EU. This, coupled with consumer concerns over food safety and the availability of EU funding through agri-environmental measures, will be crucial factors to encourage the increased adoption of organic farming practices.

Although organic farming generally can have positive impacts on soil and water quality and particularly on biodiversity and landscape protection, there is a need for further research and for reliable environmental data to identify the full benefits of organic farming on the environment.



Source: EEA

INDICATOR 50: ECONOMIC & ENVIRONMENTAL COMPETITIVENESS



Competitiveness	Austria	Denmark	Ireland	France	Netherlands	Spain	Italy	Greece	Belgium
Environmental Score	6.6	6.3	4.3	5.3	4.8	4.5	5.8	4.2	3
Economic Score	4.6	5.6	7.4	4.7	6.1	4.8	2.8	3.7	4.7

Source: Forfás

The annual competitiveness report published by Forfás benchmarks Ireland's competitiveness against countries in Europe and the OECD. It focuses on a variety of different aspects of competitiveness including economic performance, transport infrastructure and environmental protection and management. Competitiveness is regarded as the ability to achieve success in markets in a sustainable manner leading to a better quality of life overall.

Ireland's competitiveness score for economic performance ranks it first out of 18 countries in 2001. This reflects the very strong economic growth experienced in Ireland between the mid-1990s and 2001. During that time Ireland was among the fastest growing economies in the OECD and achieved rapid growth in the export of goods and services as well as an extremely rapid expansion in the numbers at work.

In contrast, Ireland's competitiveness score for environmental protection and management ranks it ninth out of 13 countries. This mainly reflects the increasing threats to the environment as well as aspects of environmental management and protection. In particular the low rank is due to the intensive use of nitrogenous fertilisers, high rates of waste generation and increasing emissions of greenhouse gases. In relation to transport infrastructure, Ireland's competitiveness score ranks at 13th out of 15 countries, reflecting in particular the quality of the road network and the proportion of goods transported by road.

The competitiveness report recognises that environmental resources are finite and scarce and that it is necessary that resources fundamental to the economic and social well being of future generations are not exhausted or degraded.

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Acronyms and Abbreviations

AER	Alternative Energy Requirement
BMW	Border, Midland and Western Region
CAP	Common Agricultural Policy
CH ₄	Methane
CHP	Combined Heat and Power Plant
CO ₂	Carbon Dioxide
CSO	Central Statistics Office
DAFRD	Department of Agriculture, Food and Rural Development
DELG	Department of the Environment and Local Government
DPE	Department of Public Enterprise
DPSIR	Driving force – Pressure – State – Impact - Response
EC	European Commission
EEA	European Environment Agency
EMAS	Eco-management and Audit Scheme
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
GDP	Gross Domestic Product
GNP	Gross National Product
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IPC	Integrated Pollution Control
LCP	Large Combustion Plant
N ₂ O	Nitrous Oxide
NHA	Natural Heritage Area
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
OECD	Organisation for Economic Co-operation and Development
PSCIs	Proposed Sites of Community Importance
RBD	River Basin District
REPS	Rural Environmental Protection Scheme
S & E	Southern and Eastern Region
SAC	Special Areas of Conservation
SO ₂	Sulphur Dioxide
SPA	Special Protection Area
TFC	Total Final Consumption
TOE	Tonnes of Oil Equivalent
TPER	Total Primary Energy Requirement
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
BATNEEC	Best Available Technology Not Entailing Excessive Costs
CO	Carbon Monoxide
EC	European Commission
N	Nitrogen
NO	Nitrogen Oxide
P	Phosphorus
VOC	Volatile Organic Compounds
UCD	University College Dublin
WFD	Water Framework Directive

User Comment Form

NOTE: Completed comments to be forwarded to: *Environment in Focus 2002*, The Environmental Monitoring and Laboratory Services Division, Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Wexford.

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COMMENTS

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