

Ireland  
National Development Plan  
2000-2006



Economic and Social Infrastructure Operational Programme

European Union  
Community Support Framework  
2000-2006



**IRELAND**

**Economic and Social Infrastructure  
Operational Programme**

**2000-2006**

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# Chapter 1 Introduction and Overview

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## 1.1 Background and context

This Programme is one of five Operational Programmes prepared in the framework of Ireland's National Development Plan 2000-2006 (NDP) and the Community Support Framework 2000-2006 (CSF) agreed between the Government and the European Commission. The NDP, which sets out a development strategy for the period 2000-2006, has as its objectives

- maintaining sustainable national economic and employment growth
- the consolidation and improvement of Ireland's international competitiveness
- fostering balanced regional development
- promoting social inclusion.

The Programme is consistent with the NDP and the CSF. It also meets the requirements of the Council Regulations laying down general provisions on the Structural Funds and is consistent with national and community policies. The Programme constitutes an application for co-funding by the EU.

## 1.2 Overview of programme

Infrastructure is the physical construction that supports economic activity and contributes to quality of life. It includes transport, water supply, waste water and solid waste facilities, energy, telecommunications, health, education and housing. The capacity and quality of infrastructure are crucial determinants of the extent to which economic and social objectives can be attained.

The NDP identified infrastructural deficits, especially in transport, environmental services and housing, as one of the principal challenges that needed to be overcome if Ireland's recent economic and social progress was to be maintained. An investment programme in economic and social infrastructure was, accordingly, identified by the NDP as a key element of the strategy to meet its objectives. This Programme elaborates on the NDP by outlining an integrated package of investments in national infrastructure, including roads, public transport, water and waste water infrastructure, coastal protection, energy conservation and alternative energy supplies, housing and health facilities over the period to 2006.

The Programme provides for a total infrastructural investment of €26.018 billion (£20.491 billion) in six Priorities – national roads, public transport, environmental infrastructure, sustainable energy, housing and health facilities. Of the total investment, €1,478 million (£1,164 million) is co-financed by the European Regional Development Fund (ERDF) through a contribution of €854 million (£673 million) in respect of four of the Priorities – national roads, public transport, environmental infrastructure and sustainable energy. The total investment also includes a projected

## Economic and Social Infrastructure Operational Programme

contribution of €567 million (£447 million) from the Cohesion Fund. The Housing and Health Facilities Priorities do not include any contribution from the EU. Details of the planned investment and indicative regional allocations are contained in Table 1.1.

**Table 1.1**

**Economic and Social Infrastructure Operational Programme 2000-2006  
Investment (€ million)**

Priority	Total Investment		
	Total	BMW	S&E
National Roads	6,748.45	2,479.36	4,269.09
Public Transport	3,051.30	476.93	2,574.37
Environmental Infrastructure	3,852.69	1,065.32	2,787.37
Sustainable Energy	222.52	78.01	144.51
Housing	9,107.98	1,985.15	7,122.83
Health Facilities	3,035.56	915.38	2,120.18
<b>Total</b>	<b>26,018.50</b>	<b>7,000.15</b>	<b>19,018.35</b>

In addition to the package of investment in national infrastructure provided for in the Programme, investment in regional economic and social infrastructure, including non-national roads, solid waste facilities, urban and village development, rural water supplies and e-commerce, is provided for in the Operational Programmes for the Border, Midland and Western (BMW) Region and the Southern and Eastern (S&E) Region.

## 1.3 EU funding

### 1.3.1 ERDF

EU assistance for this Programme is provided through the ERDF. This fund is specifically designed to promote the development and structural adjustment of the regions whose development is lagging behind and the economic and social conversion of areas facing structural difficulties. As such, the ERDF will support the objectives and strategy of the NDP, in particular its commitment to the advancement of balanced regional development and the promotion of social inclusion.

ERDF assistance will be concentrated in the following areas:

- Transport
  - completion of the TEN-T routes (particularly the M1/N1 cross-border route), other cross-border routes that contribute to integrated spatial development with Northern Ireland and routes serving the west and north-west, including the N4 and the Western Corridor, that contribute to greater balance in regional development
  - construction of Line A (Tallaght/Connolly Station) of the Dublin Light Rail System, improvement of the Dublin suburban rail and DART network, further development of the QBC network, integrated ticketing and greater access by mobility-impaired people
  - improvement of public transport infrastructure and services in Cork, Limerick, Galway and Waterford.
- Environmental Infrastructure
  - construction of waste water treatment facilities necessary to facilitate implementation of the Water Framework Directive and to support sustainable economic development by alleviating existing or potential pollution and form part of a catchment-based approach to water quality protection.
- Sustainable Energy
  - promotion of energy conservation and efficiency and the greater use of renewable energies.

Annex I contains the financial tables for ERDF co-funded investment while Annex VI contains the European Commission's decision on co-funding.

### 1.3.2 Cohesion Fund

The Programme also includes a number of projects that will benefit from Cohesion Fund assistance. The projects concerned include

- sections of the M1 and the M50 roads
- Heuston terminal and the South West rail corridor development project and city centre rail capacity enhancement project (both in Dublin)
- waste water treatment projects in Dublin, Cork and Limerick.

### 1.3.3 Overview

Table 1.2 provides an overview of the funding of investment under the Programme.

Table 1.2

**Economic and Social Infrastructure Operational Programme 2000-2006  
Investment (€ million)**

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
National Roads	6,748.45	869.62	530.22	339.40	5,878.83	231.20
Public Transport	3,051.30	414.47	209.08	205.39	2,636.83	55.83
Environmental Infrastructure	3,852.69	125.15	71.10	54.05	3,727.54	280.35
Sustainable Energy	222.52	68.28	43.42	24.86	154.24	0
Housing	9,107.98	0	0	0	9,107.98	0
Health	3,035.56	0	0	0	3,035.56	0
<b>Total</b>	<b>26,018.50</b>	<b>1,477.52</b>	<b>853.82</b>	<b>623.70</b>	<b>24,540.98</b>	<b>567.38</b>

*Note: The amounts shown for Cohesion Fund assistance are indicative and subject to individual European Commission decisions to be taken on projects in the light of the Strategic Reference Frameworks. National funding to match such Cohesion Fund assistance will be provided from non- ERDF co-financed resources.*

## 1.4 Preparation of the programme

The preparation of the programme benefited from

- submissions made by the social partners and a range of other interests, including Comhar – the National Sustainable Development Partnership
- a number of conferences and seminars organised by a wide range of interests in the lead up to the publication of the NDP
- discussions between Government Departments and the implementing agencies which operate under their aegis
- a wide range of studies commissioned in advance of the preparation of the NDP
- the work of the Monitoring Committees of relevant 1994-99 Operational Programmes and of the External Evaluators to these Programmes.

The Programme will be supplemented by a Programme Complement that will set out details of the measures outlined in the Programme.

All monetary amounts in the Programme are expressed in current prices. The regional breakdown of planned investment is indicative at time of publication.

# Chapter 2 *Background to Programme*

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## 2.1 The importance of infrastructure to sustainable development

In recent years, the Irish economy has attained a rate of growth significantly greater than the average performance of other Member States of the EU and the OECD group of countries. This growth has been accompanied by an exceptional expansion of the labour force, a decline in the rate of unemployment and healthy public finances. On the basis of reasonable assumptions, Ireland's exceptional level of economic growth is projected to continue over the forthcoming decade, albeit at a lower rate than that being achieved at present. This growth is expected to be matched by a continuing rapid expansion in the population and the workforce. Sustaining this growth and development requires substantial investment in economic and social infrastructure.

It is generally accepted that the stock and quality of public physical infrastructure is one of the key determinants of the long-term growth rate of an economy. The capacity of infrastructure to support and sustain a given level of economic activity has a major bearing on the competitiveness of industry and the optimisation of the potential of the labour force. It is also a significant factor in determining the attractiveness of the country to foreign direct investment. The physical distribution of infrastructure also has a bearing on the spatial pattern of development within the country, thereby affecting the economic and social balance of all of its regions.

Apart from its effect on the economy, the stock of infrastructure is of crucial importance in determining the quality of life enjoyed by the population. It influences lifestyle choices in such matters as patterns of work, commuting, education and leisure.

The adequacy of Ireland's existing stock of infrastructure must be measured against the extent and quality of infrastructure in other EU Member States and other countries with whom Ireland has trading relations. The need to ensure that Ireland has an efficient transport system, for example, is all the more important in view of our peripheral location, the openness of our economy and our distance from the main European markets. An economy with an efficient infrastructure will be a more attractive location for industry than one with less efficient infrastructure. The increasing internationalisation of economic activity makes it all the more important to maximise the efficiency of our infrastructure and our economy generally.

## 2.2 Existing situation

### 2.2.1 Infrastructure and the economy

After the unprecedented economic expansion and population growth that Ireland has experienced in the course of the last decade, there is agreement that Ireland has now outgrown its infrastructural base. This has occurred despite the investment in

infrastructure that has taken place under the last two National Development Plans. While it is difficult to make quantified comparisons in a reliable and meaningful way, it is clear that Ireland's infrastructure is deficient by comparison with most other developed countries. Even though Ireland's per capita income is gradually approaching the EU average, the physical infrastructure of the country is significantly inferior to that of other Member States, reflecting the policies of such States to provide a consistently high level of investment in infrastructure over many decades.

The challenge facing Ireland in relation to its infrastructure can be gauged from the Global Competitiveness Report 1999 published by the World Economic Forum. The report shows that Ireland is ranked 34th internationally out of a total of 59 countries surveyed in relation to the quality of its overall infrastructure. On the different elements of infrastructure, Ireland is ranked 39th in relation to the extent and efficiency of its roads infrastructure, 42nd in relation to the state of development of its railroads, and 31st and 27th in relation to the extent and efficiency of its air transport and ports respectively. While Ireland is ranked 19th in relation to the priority given by Government to investment in infrastructure, it is ranked 35th in relation to the level of private participation in the management and ownership of infrastructure.

In transport, the relatively poor state of development of the road network combined with the substantial increase in the volume of motor traffic in recent years has generated serious congestion in the larger urban areas and on sections of the major inter-urban routes. Given the overwhelming dependence of Ireland on roads for internal transport, this is having a major negative impact on economic activity. At the same time, many of the inter-urban rail lines and much of the related rolling stock remain inadequate and the quality, speed and reliability of services are acutely deficient. Equally, public transport systems within the major urban centres are very limited and do not have the capacity to relieve the pressures on the over-burdened road network.

Despite record outputs of new housing over the past few years, Ireland is experiencing a serious shortage of housing with accompanying increased costs for households. This problem is due mainly to demographic factors, with a relatively large proportion of the population in their early 20s and a high household formation rate. The insufficiency of available water and waste water infrastructure is also a key issue in determining the possible level of output of new housing.

Apart from the need to meet the demand for water and waste water services in relation to the provision of new housing, investment in environmental services is badly required for other pressing reasons. Major deficiencies remain to be addressed in the water and waste water sectors to enable Ireland to cater for development needs generally, to face the additional challenges of complying with EU Directives on drinking water and waste water treatment, and to prevent water pollution.

Undoubtedly, these and other infrastructural deficiencies are adding to the cost base of Irish industry, thereby damaging its competitiveness. They are also exacerbating

difficulties in the supply of labour and adversely affecting the quality of life. From a regional and spatial development perspective, the deficiencies are inhibiting the BMW Region from attaining its full potential and reinforcing existing social and economic imbalances between it and the S&E Region. Overall, therefore, the deficiencies translate into a constraint on environmentally sustainable economic growth and a threat to the continuation of the economic and social progress that Ireland has experienced in recent years.

### 2.2.2 Infrastructure and the environment

The existing environmental situation is described in detail in the NDP and the CSF (para. 1.7.1 et seq.).

Overall, Ireland's environment has been subject to fewer pressures than the environment of other European countries and, consequently, is of a relatively high standard in most respects. A range of policies and measures, including the recent Green Paper on Sustainable Energy, regional waste management strategies, a national hazardous waste management plan, and a national climate change strategy, is in place or under development to protect and enhance the environment and advance to more sustainable patterns of development.

However, increased pressures from a number of sources, namely

- increased population and household numbers, giving rise to increased demand for housing, services, infrastructure and energy, as well as to increased consumption and waste
- motor traffic growth (including the convergence of the car ownership rate to the EU average), giving rise to increased congestion, noise, emissions to the air (including greenhouse gases), as well as to increased energy use
- changed agricultural practices, including intensification and increased inputs (including fertilisers) and production of wastes affecting water and air (including greenhouse gases)
- urbanisation
- the general acceleration of economic activity and associated use of resources and demand for services such as waste disposal
- the growth in tourism and the consequent congestion

are endangering the quality and quantity of natural resources in some significant respects. The main pressures are as follows.

#### *Emissions to air*

Ireland has a greenhouse gas emissions growth limitation target of 13% over 1990 levels for the period 2008 to 2012. In a business-as-usual scenario, it is predicted that Ireland's emissions would grow by 35% in the commitment period. It is clear, therefore, that significant reductions from all sectors must be achieved if the Kyoto

limit is to be achieved. The major greenhouse gas in Ireland, CO<sub>2</sub>, is derived from energy use principally in the energy, residential, transport, industrial and commercial sectors while Methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O), the next largest greenhouse gases, are derived mainly from the agricultural sector.

On a positive note, smoke concentrations in Dublin have decreased following the implementation of smoke control legislation in 1990. Concentrations in several other centres are set to decrease as the application of this legislation is extended. In addition, the levels of lead have fallen in line with the fall in the use of leaded petrol throughout the 1990s. However, it is expected that major urban centres such as Dublin will have difficulty in meeting proposed new EU limits on PM<sub>10</sub> and nitrogen dioxide (NO<sub>2</sub>).

### *Water Quality*

Over the last decade, the length of river classified as unpolluted has dropped from 77.3% to 66.9%. The deterioration continues a trend which has been noted over the last twenty-five years. The most significant threat to water quality in rivers and lakes in Ireland is the enrichment of waters beyond natural levels by phosphorous and nitrogen. This is caused by surplus inputs of fertilisers to farmland that are washed off in periods of high rainfall. Municipal discharges are thought to be responsible for most of the incidences of serious pollution that affects less than 1% of river length.

The report on drinking water quality in Ireland for the year 1997 shows that over 91% of public supplies and 64% of group schemes are at an acceptable standard. An intensive programme in relation to the improvement of rural water supplies is being implemented. In general, the quality of bathing waters has remained high with 98.5% of the bathing areas complying in 1998 with the minimum mandatory standards set by the EU. Overall, the most recent EU report rates the quality of Ireland's bathing water as excellent in both coastal and freshwater areas. The number of Blue Flags awarded to Irish beaches has increased substantially.

### *Waste*

Waste is one of the most problematic areas of modern environmental management and the amount of household and commercial waste collected by or on behalf of local authorities has increased dramatically in recent years. Irish waste management practice has been heavily reliant on landfill and recycling rates are low by comparison with other Member States. Under the new waste management policy adopted in 1998, local authorities are now adopting new regional waste management plans providing for a dramatic reduction in reliance on landfill, and the development of a modern, integrated waste management infrastructure. Waste reduction and management form the cornerstone of the proposed National Hazardous Waste Management Plan that will be finalised shortly. Litter has for many years been a significant problem in many parts of the country.

### *Natural Heritage*

Ireland's natural heritage is coming under increasing pressure from the acceleration in economic development and the associated need for improved economic and social infrastructure. Significant efforts will be required to maintain and improve the natural heritage and to minimise the impact of new and improved infrastructure on it.

Natural Heritage Areas (NHAs), when they are designated, will be the national framework to provide protection for areas of wildlife importance in a national context. All other nature conservation designations overlap with NHAs. NHAs, which will cover approximately 850,000 hectares, will be given a legal basis by way of a forthcoming amendment of the Wildlife Act, 1976.

The conservation of the natural heritage in Ireland has been strengthened and expanded by EU law. The EU Habitats Directive (92/43/EEC) requires Member States to designate and participate in the EU Natura 2000 network of sites for the conservation of species and habitats which are of EU importance. This network will consist of Special Areas of Conservation (SACs) established under the Habitats Directive together with Special Protection Areas (SPAs) established under the EU Birds Directive (79/409/EEC).

Both the Birds and the Habitats Directives have been transposed into national law by way of Regulations. However, the European Communities (Natural Habitats) Regulations, 1997, introduced following detailed negotiations with farming and conservation organisations, are more significant because they provide not only for the designation of SACs but also for the protection measures that apply to SPAs as well as SACs.

SPA designations began in 1985 and, by 1997, there were 109 SPAs covering 230,000 hectares. Based on an extensive survey of NHAs conducted from 1992 to 1994, candidate SACs that met the scientific criteria set out in the Habitats Directive were identified. Ireland has publicly advertised 363 proposed candidate SACs, 267 of which have been formally transmitted to the EU Commission.

Ireland is committed to formally transmitting the Irish Natura 2000 sites to the European Commission by 7 January 2001 to conform with the deadline set down in the CSF. The CSF also gives a clear and irrevocable commitment to guarantee the consistency of its programmes with the protection of sites as provided under Natura 2000. In the interim, the European Communities (Natural Habitats) Regulations, 1997, provide full protection to the relevant sites from their date of public advertisement. Dúchas (and other Government Departments/Agencies) regularly monitor activities taking place in candidate SACs transmitted to the Commission and proposed candidate SACs that have been publicly advertised and have yet to be transmitted. All SACs and SPAs are visited a minimum of twice a year, the larger sites being monitored on an ongoing basis.

### *Environmental Challenges*

The main environmental challenges that Ireland now faces include

- meeting commitments in relation to the control of greenhouse gases and other emissions to the atmosphere
- halting the decline in the quality of rivers and lakes caused by excessive inputs of nutrients
- reducing and managing waste
- protecting the urban environment from degradation due to transport and other pressures
- protecting the natural resources of the countryside, coastline and marine areas, and their flora and fauna
- managing land-use in a strategic manner.

### *Sustainable Development Strategy*

The National Strategy for Sustainable Development published in 1997 (*Sustainable Development: A Strategy for Ireland*) recognised that environmental considerations needed to be brought centre stage in economic and other policies and it defined an agenda to reinforce and deepen environmental integration. This included specific objectives and measures in a series of action programmes for sustainable agriculture, forestry, use of marine resources, energy policy, industrial development, transport and tourism. The overall aim of the strategy is to ensure that the economy and society can develop to their full potential within a well-protected environment without compromising the quality of that environment, and with responsibility towards present and future generations and the wider international community. The concept of sustainability that has informed Irish environmental policy over recent years requires development to be within the capacity of the environment to support it without suffering lasting damage or depletion.

Among the main principles underlying Ireland's strategy are the precautionary principle and the principle of integration. The precautionary principle requires that emphasis should be placed on dealing with the causes, rather than the results, of environmental damage and that where significant evidence of environmental risk exists, appropriate precautionary action should be taken, even in the absence of conclusive scientific proof of causes. Among the measures in place to give effect to this principle is Environmental Impact Assessment (EIA), which will be used as part of the development consent process for all major projects being undertaken in this Programme that are likely to have a significant effect on the environment, e.g. roads and environmental services. In addition, the requirements of Directive 79/409/EEC on the conservation of wild birds and Directive 92/43/EEC on the conservation of natural habitats will be complied with.

While the proposed EU Directive on strategic environmental assessment has yet to be adopted, Ireland has already introduced a system of assessing the environmental

impact of plans and programmes. In 1999, the Government approved the introduction on a pilot basis of a procedure for the “eco-auditing” of policies in specific sectoral areas of Government Departments and in respect of national development plans. It also approved the evaluation of the results of pilot exercises by the Departments concerned and the Green Network of Government Departments (all major Departments) with a view to achieving a wider use of eco-auditing after one year.

The pilot eco-audits of this Operational Programme are contained in para. 3.7.2 for the National Roads Priority and the Public Transport Priority, para. 4.5.2 for the Environmental Infrastructure Priority, para. 5.5 for the Sustainable Energy Priority, 6.4.1 for the Housing Priority and para. 7.5.1 for the Health Facilities Priority. Summaries of these pilot eco-audits are presented in tabular form by means of eco-audit check lists in Annex III.

The principle of integration involves the embedding of environmental considerations in a range of policies, plans and programmes to enable environmental considerations to be addressed in an effective and comprehensive manner and ensure that such policies and programmes support the objective of sustainability. In a European context, the need for integration is recognised in the EU’s 5th Environment Action Programme and will also be central to its successor (currently being developed) and in the planned EU Sustainable Development Strategy.

Integration has been given effect in this Operational Programme through

- the carrying out of a pilot eco-audit
- the input by Comhar to this Operational Programme prior to its finalisation
- the use of environmental criteria in project selection
- the use of appropriate environmental indicators and the inclusion of the environmental dimension in Operational Programme evaluations; environmental indicators will be incorporated, where appropriate and feasible, in the Programme Complement in order to quantify, as far as possible, the environmental impact of the measures contained in the Operational Programme
- inclusion of environmental representation on the monitoring committee
- implementation of project level EIAs where appropriate
- provision of additional information on environmental matters for all bodies involved in project selection and in programme management.

In addition, the implementation, monitoring and review mechanisms for the National Climate Change Strategy and the arrangements for ongoing review of the Operational Programme will be co-ordinated so as to maximise mutual complementarity.

## 2.3 Determining investment priorities

If the programme of investment from 2000 to 2006 is to achieve its objective of sustaining current levels of economic growth, it is clear that particular attention must be devoted to removing existing constraints and that major improvements to the physical infrastructure of the country must be central to economic policies. In determining investment priorities, account must be taken not alone of the capacity of the stock of infrastructure to cater for existing needs, but also of the likely future demands that will be made on infrastructure. Thus, account has to be taken of the likely future growth of the determinants of future demand, including population, household formation, road traffic and economic activity.

Infrastructural development has been widely and strongly supported by major reviews of Ireland's investment needs, including *National Investment Priorities for the Period 2000-2006*, published by the Economic and Social Research Institute, and *Opportunities, Challenges and Capacities for Choice* (1999), published by the National Economic and Social Council. It is also supported by the *Ex Ante Evaluation of the National Development Plan, 2000 to 2006*, published by the CSF Evaluation Unit. The justification for the investment varies between the different sectors, but is principally

- to meet existing and emerging needs which are not adequately catered for by the normal operation of the market, e.g. roads and public transport
- to protect the environment and to alleviate constraints on economic development, e.g. water services
- to combat social exclusion, e.g. the provision of social housing.

As well as remedying the constraints to national economic growth generally, investment in infrastructure provides an opportunity to put in place measures to achieve more comprehensive, co-ordinated and sustained balanced economic and social development.

## 2.4 National Spatial Strategy

2.4.1 The objective of the Government policy on regional development is to achieve more balanced regional development in order to

- reduce the disparities between and within the BMW and S&E Regions
- develop the potential of both Regions to contribute to the greatest possible extent to the continuing prosperity of the country.

The overall purpose of the National Spatial Strategy is to translate the Government's policy on regional development into a more detailed blueprint for spatial development throughout the country over the longer term in a manner which ensures that people, irrespective of where they live and work, benefit on a more equitable basis from social and economic development. The Strategy will provide a framework

within which investment in infrastructure will be used to achieve developmental objectives both nationally and at regional level.

- 2.4.2** The National Spatial Strategy will build on the three key elements already identified in the NDP.

Firstly, the Strategy will identify broad spatial development patterns for areas and set down indicative policies in relation to the location of industrial development, residential development, services, rural development and tourism and heritage over a twenty year time period. This will be accompanied by proposals for the development of infrastructure to support the patterns of development which best underpin the aim of balanced regional development.

Secondly, the strategy will identify and set out a scenario for the future role of Irish cities and towns of different sizes, together with their links to rural areas, which recognises and builds on the economic and social interdependence between urban and rural areas.

Thirdly, the strategy will nominate and promote a small number of new regional gateways to support a more even spread of development throughout the country. These gateways will be strategically located regional centres that will drive social and economic development throughout their surrounding counties and regions by virtue of their critical mass of population, skills, economic base, support services and infrastructure.

- 2.4.3** The development of the Strategy will take account of policies to promote the balanced development of EU territory embodied in the European Spatial Development Perspective (ESDP) which was agreed in May 1999 at an Informal Council of EU Ministers responsible for Spatial Planning. The fundamental goals set out in the ESDP relate to economic and social cohesion, the conservation of natural resources and cultural heritage, and more balanced competitiveness of the European territory. The policy orientations for spatial development set out in the ESDP relate to polycentric urban development and a new urban-rural relationship, parity of access to infrastructure and knowledge, and wise management of the natural and cultural heritage.

- 2.4.4** A broad “bottom-up” consultation process will be used in developing the strategy in order to maximise the contribution of community and sectoral interests and to ensure that the strategy closely reflects and meets the needs of citizens at large. This approach to the preparation of the Strategy will ensure that there is coherence across sectors and policies from a spatial development perspective. Building social consensus on this new public strategy means that the time frame for its preparation is longer than might otherwise be the case. The four Territorial Employment Pacts may also be in a position to make an input to this consultative process.

**2.4.5** The National Spatial Strategy will have a twenty-year time perspective on social and economic development that will inform the implementation of this Programme as well as any future operational programmes. The Government is committed to preparing the Strategy by the end of 2001. Therefore, the Strategy should be completed in time for its implications to be taken into account in the mid-term and ex-post evaluations of the Programme. The Strategy will provide a mechanism for assessing the extent to which investment under the Programme is contributing to the achievement of balanced regional development. While the Programme will implement infrastructure investment that has been identified as meeting the immediate requirements for the efficient operation of the economy, the Strategy will be a critical instrument for the mid-term review of the Programme.

The infrastructure investment strategies outlined in this Programme respond to well-established needs in the individual sectoral areas and take account inter alia of the Strategic Planning Guidelines for the Greater Dublin Area. They can be adapted if necessary to take account of the outcome of the National Spatial Strategy.

## 2.5 Objectives, strategy and funding

### 2.5.1 Objectives and strategy

In the light of the foregoing, the objectives of the Programme are

- to maintain economic growth and competitiveness by increasing the capacity of the national economic infrastructure
- to enhance the potential of all parts of the country to support and increase economic activity
- to improve capacity to protect and improve the environment
- to improve the quality of life.

The strategy to achieve these objectives is set out in six Priorities.

- National Roads, comprising investment in national roads
- Public Transport, comprising investment in mainline rail, urban public transport and national public transport services
- Environmental Infrastructure, comprising water and waste water services and coastal protection
- Sustainable Energy, covering promotion of alternative energy and energy efficiency
- Housing, comprising social housing
- Health Facilities, comprising the development of the health infrastructure in acute hospitals, in non-acute/continuing care facilities, information and communications technology and research.

The total planned investment over the six Priorities is €26.018 billion (£20.491 billion).

Of the total investment, €1,478 million (£1,164 million) is co-financed by the ERDF through a contribution of €854 million (£673 million) in respect of four of the Priorities – national roads, public transport, environmental infrastructure and sustainable energy. The total investment also includes a projected contribution of €567 million (£447 million) from the Cohesion Fund. The Housing and Health Facilities Priorities do not include any contribution from the EU.

Details of the Priorities, investment strategies, sources of funding (including contributions from the ERDF) and summary descriptions of measures are set out in Chapters 3 to 7.

### 2.5.2 ERDF and Cohesion funding

ERDF assistance will be concentrated on a number of areas.

- **National Roads and Public Transport**
  - completion of the TEN-T routes (particularly the M1/N1 cross-border route), other cross-border routes that contribute to integrated spatial development with Northern Ireland and routes serving the west and north-west, including the N4 and the Western Corridor, that contribute to greater balance in regional development
  - construction of Line A (Tallaght/Connolly Station) of the Dublin Light Rail System, improvement of the Dublin suburban rail and DART network, further development of the QBC network, integrated ticketing and greater access by mobility-impaired people
  - improvement of public transport infrastructure and services in Cork, Limerick, Galway and Waterford.
- **Environmental Infrastructure**
  - construction of waste water treatment facilities necessary to facilitate implementation of the Water Framework Directive, and to support sustainable economic development by alleviating existing or potential pollution and forming part of a catchment based approach to water quality protection.
- **Sustainable Energy**
  - promotion of energy conservation and efficiency and the greater use of renewable energies.

Strategic Reference Frameworks for Cohesion Fund Assistance for Transport and Environmental Infrastructure have been prepared. In the transport sector, assistance will be concentrated on sections of the M1 and the M50 routes as well as public transport projects in the greater Dublin area. In the environmental infrastructure sector, assistance will be concentrated on waste water treatment projects in Dublin, Cork and Limerick designed to meet the requirements of the Urban Waste Water Treatment Directive. The matching national funding will be established by the Frameworks.

**2.5.3 Other infrastructural investment**

In addition to the investment provided for in the programme, investment in regional economic and social infrastructure totalling €3.95 billion (£3.11 billion) is provided for in the Operational Programmes for the BMW Region and the S&E Region. The investment relates to non-national roads, solid waste facilities, urban and village development, rural water supplies and e-commerce.

# Chapter 3 *National Roads and Public Transport*

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## 3.1 Introduction

The two Priorities, the National Roads Priority and the Public Transport Priority, take into account an extensive range of studies undertaken under the Operational Programme for Transport 1994-1999 (OPTRANS) Technical Assistance Programme of transport infrastructure investment, namely the National Road Needs Study, and public transport studies by CIÉ. These studies were the subject of a review (Review of Transport Infrastructure Needs) by the External Evaluator to OPTRANS. The review concluded that the most serious bottlenecks and capacity pressures are in two areas: the national inter-urban road network and urban public transport systems. The Priorities also take account of the reports from the Dublin Transportation Office (DTO), including the Short-Term Action Plan and the 2000-2006 Transportation Blueprint.

A comprehensive well-functioning national roads and public transport infrastructure is of critical importance

- in the efficient and cost effective movement of persons and freight within, and into and out of, the country
- in the achievement of balanced regional development and the diffusion of employment opportunities
- in securing the competitiveness of the economy
- in minimising the adverse effects of transport activities on the environment.

Ireland's peripheral island location makes it all the more important that it has high quality internal transport arrangements. Despite the investment and progress achieved under OPTRANS, the national roads network and public transport systems are deficient in several major respects. The overarching priorities in the transport sector will be to improve the inter-urban road network and public transport services as part of an integrated approach to meeting transport needs. As part of this integrated strategy, roads infrastructure investment must be complemented, particularly in the larger urban areas, by measures such as improvements in public transport, promotion of alternative modes, closer co-ordination of transport and land use planning, management of road transport demand and improved traffic management. Such measures are already reflected in Irish transport policy and practice particularly in the Dublin area, e.g. parking controls, QBCs, Strategic Planning Guidelines, improvements in public transport. The Cabinet Committee on Infrastructural Development, including development of Public Private Partnerships, may wish to request from the Monitoring Committee information on the further development of non-infrastructural measures which are essential complements to the transport infrastructural programme.

In relation to the capital city the update of the DTI Strategy is paying particular attention to the further development of demand management policies and, in that

context, is taking account of the conclusions of the Road Pricing Study. While acknowledging the technical feasibility and potential contribution of road pricing to reducing traffic demand the Road Pricing Study also emphasised the importance of having alternative transport arrangements available. It is envisaged that the update of the DTI Strategy, building on the initiatives already taken, will provide for the development of a comprehensive Demand Management Strategy, in particular by promoting modal shift towards public transport, cycling and walking. While the Strategy will apply in the Dublin area in the first instance, it will assist in the development of demand management policies more generally. The implementation of the DTI strategy will form part of the Mid-Term Review.

## 3.2 Ex-Ante Evaluation

### 3.2.1 National roads

Ireland's road network as a whole carries 96% of passenger traffic and 90% of freight traffic, reflecting a reliance on roads which is one of the highest in the EU. The corresponding figures for the EU as a whole are 88% for passenger traffic and 72% for freight traffic. In view of our small land area and dispersed pattern of population settlement and economic activity, the road network is and will continue to be the dominant mode of internal transport in Ireland.

The national primary roads are the major long distance through-routes linking the principal ports and airports, cities (which have increasing concentrations of population in their vicinity) and large towns, and serving major geographical regions and a high percentage of the total population. They account for 3% of the total road network but carry 27% of total road traffic. Two thirds of traffic on national primary roads is work-related and typically one sixth of it is comprised of heavy commercial vehicles. Almost 20% of total vehicle kilometres of travel on these roads is accounted for by goods vehicles.

National secondary roads (3% of the network and 11% of total road traffic) are the medium distance through-routes connecting important towns, serving medium to-large geographical areas and linking to the national primary routes to form an arterial network.

### 3.2.2 National road infrastructure deficiencies

There are two aspects to the deficiencies of the national roads infrastructure; firstly growth in road traffic and secondly, the condition of the infrastructure itself relative to the traffic demands placed upon it.

#### *Road Traffic Growth*

Economic growth, rising disposable incomes, demographic trends and an increased

emphasis on personal mobility have all contributed to increasing traffic on Irish roads. In addition, certain economic factors have resulted in growth in transport demand. These include

- the dispersal of industrial activities away from traditional urban locations
- changing production and stock-control methods, requiring more frequent shipment of smaller quantities of goods
- the growth of the service sector, involving multi-site businesses
- the growth of the tourism sector
- increased business and professional mobility.

Consumer and social factors, such as the demand for year-round availability of seasonal foods, have also influenced transport demand.

As is shown in Table 3.1, road traffic has been growing rapidly in Ireland in recent years.

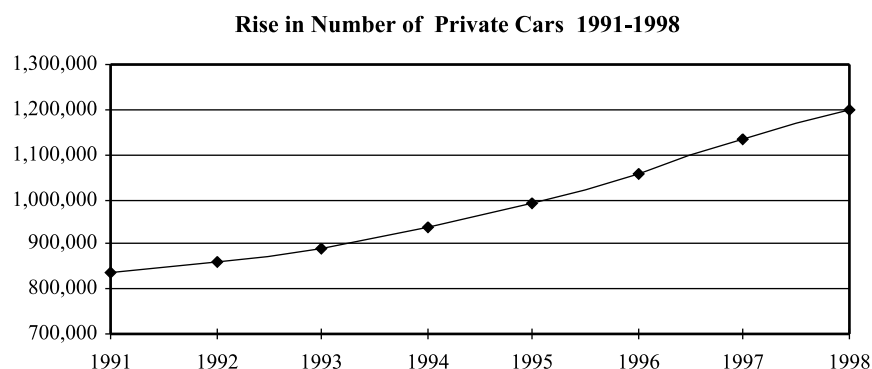
**Table 3.1**

**Percentage Increase in Traffic Volumes on National Roads (%)**

<b>Year</b>	<b>Percentage increase</b>
1992	+ 6.5
1993	+ 5.4
1994	+ 4.5
1995	+ 7.8
1996	+ 8.4
1997	+ 8.7
1998	+ 6.6

*Source: National Roads Authority*

The number of private cars rose by over 39% between 1992 and 1998, when it reached 1.196 million. However, car ownership rates are still low by European standards. In 1997 there were 454 cars per 1000 population in the EU as a whole; the 1988 figure for Ireland was 323 per 1,000 population. The number of goods vehicles in Ireland reached 170,866 in 1998, an increase of over 18% since 1992. A 1998 projection of vehicle numbers and traffic growth by the External Evaluator for OPTRANS suggests that the private car stock could reach 1.9 million by 2011. This would be equivalent to a car ownership rate of 486 per 1,000 population, which is comparable to forecasts for the level of car ownership in Britain in that year and to ownership rates currently pertaining in some EU member states. The External Evaluator's forecast for goods vehicles in 2011 is 184,000, an increase of 7.7% on 1998.



*Source: Irish Bulletin of Vehicle and Driver Statistics 1998 – Department of the Environment and Local Government*

Furthermore, traffic volumes have been growing faster than the growth in the fleet size over the last decade. National Roads Authority (NRA) data indicate that distance travelled per car has been increasing by 1.2% per annum over the last ten years. If this trend continues, then (in conjunction with increased car numbers) traffic volumes could grow by roughly 5% per annum over the period to 2011. By that year, volumes might be 110% higher than their 1996 levels. Similarly, distances travelled per commercial vehicle have been increasing at a rate of 1.24% per annum over the last decade; this together with the forecast increase in goods vehicles would give growth in commercial traffic of 55% over the period 1996 to 2011.

In the Greater Dublin Area, the growth in traffic in the peak hours was 7.6% per annum for the period 1991-1997. In the same period, average speeds on the main traffic routes slowed from 22 kph in 1991 to 14 kph in 1997. The DTO has forecast that the projected growth in demand will increase to 488,000 trips in the peak hour by 2016, as compared with an existing figure of 250,000.

### **Road Infrastructure**

Under the OPTRANS Technical Assistance Programme, a National Road Needs Study was commissioned to assess national road investment needs and to

- identify the type of roadway that would be appropriate for each segment of the national road system in order to cater for projected traffic flows over a twenty year period (i.e. 2000-2019) and to achieve an average inter-urban travel speed of 80 km per hour
- determine the specific road improvements necessary to achieve these objectives and the costs involved

- develop a computerised database to hold accident, traffic, pavement, geometric and bridge data and to provide a tool for investment needs assessment
- provide information on the condition of the road system to permit the costing and scheduling of appropriate maintenance operations and to facilitate the introduction of a pavement maintenance management system.

The National Road Needs Study was completed in May 1998. It indicated that in 1995, 91% of the inter-urban national primary network could meet the minimum level of service requirement equivalent to 80 kph average journey speed (LOS D). It was estimated that 94% of the inter-urban national secondary network would satisfy this level of service standard, primarily due to the significantly lower traffic levels on the secondary network.\* However, as traffic increases, an increasing percentage of the network will fail to meet the specified level of service objective without ongoing improvements to the network.

A detailed analysis was carried out to assess the likely performance of the network at the end of OPTRANS based on traffic levels projected for 1999 using a growth rate approaching 6% per annum. This demonstrated that 24% of national primary roads and 14% of national secondary roads would be below the specified level of service standard at end 1999. The Needs Study estimated that at that stage, expenditure of £1.93 billion (1996 prices) would be required solely to eliminate this deficiency. Furthermore, in the absence of investment to cater for the forecast growth in traffic, the Study projected that by 2004, 37% of the national primary roads would be below the specified level of service standard while in 2019, 66% of the national primary network would fail the standard, with about 37% of the national secondary network also not meeting the standard.

It is clear from the foregoing that, in the absence of substantial further investment, the level of service provided by the national road network will deteriorate steadily in the years ahead due to the inability of the network to cater for rising traffic volumes. Such a situation would have serious economic and social implications and would affect the competitiveness of the Irish economy.

### 3.2.3 Transport in the Greater Dublin Area

#### *DTI Strategy*

The DTI Strategy was developed between 1991 and 1994 and adopted by Government in 1995. It is an ongoing transportation planning process and specific integrated

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\* This in fact overstates the extent of the national road network meeting the minimum level of service (LOS) standard. The Needs Study assessment of level of service on the road network relates only to the inter-urban network with urban sections within speed limits excluded and assumed to be deficient in the context of providing an 80 kph average inter-urban travel speed. Including urban sections in the analysis would indicate that 41% of the national primary network and 27% of national secondary roads would be deficient by end 1999.

proposals have been developed for the medium term. These are set out in the DTO Transportation Blueprint 2000-2006. A comprehensive longer-term strategic update covering the period to 2016 is underway and will be completed shortly. The principal features of the medium term Strategy are

- a major investment in public transport, including construction of a Light Rail Network (LUAS), the expansion and enhancement of suburban rail and the development of QBCs
- upgrading of the national road network in the Greater Dublin Area, including access to Dublin Port and completion of the C-Ring
- no increase in national road capacity within the C-Ring
- improved management of the transport system and enforcement of traffic and parking law
- parking restraint policies.

While progress has been made in implementing many elements of the Strategy, there has been considerable slippage in the implementation of some of the major infrastructural projects (e.g. LUAS, Dublin Port Tunnel, C-Ring). This slippage combined with faster than expected growth in transport demand has resulted in severe traffic congestion.

By 1997 it was clear that travel demand was growing at a far higher rate than had been anticipated in the original DTI Study. Table 3.2 shows the increase in demand for transport between 1991 and 1997 and compares it with the transport demand as projected in the study. It also shows the projection of current levels of growth into the future.

Table 3.2

Projected Growth in Peak Hour Trip Demand

Projection	Year			
	1991	1997	2001	2006
Original DTI Projection	172,000	189,000	206,000	225,000
Actual 1991-1997 + existing growth continued	172,000	250,000	302,000	367,000
Actual 1991-1997 + growth maintained at 50% of current levels	172,000	250,000	276,000	308,000

Even taking a level of future growth equal to half of current levels, it is clear that the original DTI Strategy is not extensive enough to meet the challenge. The problem is further exacerbated by slippage in the implementation of major infrastructural elements of the strategy.

Full implementation of the DTI Strategy will cater for 225,000 peak hour trips. This leaves an additional 83,000 to 142,000 to be addressed in the period to 2006. The Short Term Action Plan, published in 1998, goes some way towards tackling this shortfall and, following its implementation by the end of 2000, some 34,000 units of additional public transport capacity should have been added to the system. Thus, the growth to be considered for the purposes of the 2000-2006 investment programme is approximately 100,000 additional peak hour trips. A more accurate calculation of projected growth will be available following the updating of the DTI Model as part of the Update of the Strategy.

In addition to the additional transport demand, the spatial distribution of that demand is also of significance. There have been changes in the pattern of transport demand over the period since 1991. This is borne out by a comparison of the results of the 1991 and 1997 Origin/Destination Survey which shows that

- some areas have shown large increases as destinations for car trips, e.g. Clondalkin/Tallaght has increased by 286%
- the growth in employment generally has resulted in an 88% increase in car trip destinations to the South-East Inner City
- other areas such as Dublin Airport, Clonskeagh/Belfield, and some city centre areas, have shown large increases in destination car trips in the morning peak.

In addition, compared with 1991, the 1997 Origin/Destination Survey showed the following:

- person-trips by car in the DTI area have risen by 65% from c. 110,000 to 182,000
- person-trips by rail have risen by 20% from c. 18,000 to 21,000
- person-trips by bus have risen by more than 5% from c. 45,000 to 47,000
- the mode split for car has risen from 63% to 73%
- the mode split for bus has fallen from 26% to 19%
- the mode split for rail has fallen from 10% to 8%.

### *Strategic Planning Guidelines*

The future pattern of demand will be influenced by the implementation of the Strategic Planning Guidelines for the Greater Dublin Area which set out the proposed land use strategy for the region to the year 2011. The socio-economic and demographic background to the Guidelines is as follows:

- economic prospects for the Greater Dublin Area are good and employment opportunities arising from increased economic activity will induce in-migration to the Area

- by 2006 the population will grow to 1.65 million in 607,600 households and to 1.76 million in 705,800 households by 2011. This represents an increase from 1996 levels of 26% in population and 58% in households by the year 2011.
- employment in the Greater Dublin Area could exceed 800,000 by the year 2011, compared to 667,000 in 1999.

The Guidelines provide a planning framework based on the principles of sustainable development that requires that

- development should be consolidated within the Metropolitan Area, comprising the existing built-up area of Dublin and its environs. This consolidation will be balanced by the concentration of development of a small number of identified major centres in the Hinterland Area (which consists of a range of towns of various sizes together with extensive areas of countryside outside the Metropolitan Area) served by transportation corridors.
- development throughout the Greater Dublin Area should rely on a significantly enhanced public transport system. The existing system is inadequate to meet current needs and requires action to increase capacity and facilitate future growth.
- the consolidation of population into the Metropolitan Area should, over time, allow for a much enhanced public transport system. An increase in overall development densities is required to achieve this, as well as measures to ensure priority for public transport. Over time, this will lead to a more compact urban form relative to the size of population and will reduce the overall demand for travel.
- towns in the Hinterland Area will each have a high level of employment activity, high-order shopping and a full range of social facilities. The longer-term objective is to create towns that are as self-sufficient as possible, with only limited commuting requirements to the Metropolitan Area. These commuting links will be provided by good road and rail infrastructure. Demand management measures may be necessary to ensure that unsustainable levels of peak hour commuting do not in fact occur.

### 3.2.4 National public transport services

There are several dimensions to public transport nationally. On the one hand there is a need for transport between the regions and Dublin and between the major regional centres. Secondly, there is a need for public transport within the regional cities and large regional towns. And thirdly, there is the issue of public transport services within rural areas and between them and regional towns.

Mainline railway has always been seen as a key element of the provision of access between Dublin and the regions. However, services, particularly to the west, have seen significant reductions in performance over the past decades due to under-

investment in the infrastructure. Shortcomings such as the lack of rolling stock capacity that results in overcrowding on very many rail services are obvious. Lack of investment has also led to the deterioration of the quality of railway infrastructure, such as track and signalling, and has necessitated slower track speeds that further inconvenience the passenger. However, the transport of goods and people by rail is enjoying a renaissance in the public mind. It is widely perceived to be safer and more environmentally friendly than equivalent road transport.

Passenger carryings on the mainline railway have increased by 20% cumulatively over the past five years. This growth has been due to national economic buoyancy, an improved level of service and an increase in long-distance commuting.

It is accepted that there has been significant under-investment in public transport outside of Dublin in the past. In the regional cities and towns, the quality of the vehicles has fallen and the services have not been able to expand to meet the needs for greater mobility. In Cork, for instance, the average age of the urban bus fleet has been rising steadily for some years. This has had a very serious impact on the level of bus usage and on customer satisfaction with the service, as well as on the extent of traffic congestion. A similar situation has occurred in the other three provincial cities (Galway, Limerick and Waterford). In response, Bus Éireann has now embarked on a comprehensive fleet replacement programme for the cities. In rural areas, the low population density and the dispersed nature of rural habitation have always presented a challenge for public transport. However, in common with urban areas, people living in rural areas are demanding improved public transport services, reflecting the general increase in prosperity on the one hand, and their wish to be able to share fully in it on the other.

As is shown in Table 3.3, passenger journeys on provincial city services are starting to rise slowly and are expected to continue to rise in line with planned service improvements.

**Table 3.3**

**National Bus Services  
Daily passenger Numbers**

	<b>1998</b>	<b>1999</b>
Provincial City Services	18,900	18,938
Other Scheduled Services	18,610	18,499
School Transport Scheme	46,882	47,761
<b>Total</b>	<b>84,392</b>	<b>85,198</b>

While rural bus services are in decline due to depopulation and increased car ownership, commuter services are showing a significant increase and long-distance services continue to grow. Passenger journeys on school services are expected to fall due to the changing age profile of the school going population and decline in pupil numbers.

Overall, the under-investment has eroded the attractions of travel by public transport and public transport has lost out more and more to the private car. Given the natural accessibility advantages of the private car, public transport operators will only be able to compete effectively if they can provide high quality services that the customer wants. In order to deliver these services, major investments must be made to tackle the shortcomings that inhibit their development and, in particular, specific rail mobility access issues must be addressed.

Significant improvements to inter-urban, regional and urban bus services can be made through public transport investment. Investment in bus services in any one region, for example Cork, can deliver both local and national benefits. Local benefits include improvements to city services, inner city revitalisation and the easing of traffic congestion. Benefits which are passed on to other areas outside the city come through improved quality in the services to these areas from a major city and improved co-ordination with inter-city bus and rail services.

Adequate traffic management in the urban centres throughout the country is also essential for the efficient and effective operation of bus services.

### 3.2.5 Transport and the environment

As is clear from the evaluation of the environmental situation in the NDP and CSF, the environmental impact of transport is extensive and significant, particularly in relation to air emissions (including greenhouse gas emissions), habitats and landscapes. Transport is the largest source of NO<sub>x</sub> and CO and the third largest source of CO<sub>2</sub> emissions. In addition congestion is a growing problem, particularly in the larger urban areas.

In response to these challenges, there have been a number of developments which are assisting in mitigating the impacts of transport on the environment.

- Technology has greatly reduced the emissions intensity of transport through improvements in vehicle emission-control systems and fuel efficiencies. Since 1970, emissions from new cars on the EU market have reduced by over 90%. Further major reductions will be achieved over the next five years. Technology in the form of telematics and intelligent traffic management and signalling systems is also being harnessed to provide better use and logistical management of transport infrastructure, both road and rail.
- Cleaner fuels are being marketed which significantly reduce, and in some cases

eliminate, certain pollutants in the composition of the fuels. However, some of these gains are being eroded by increased travel, and CO<sub>2</sub>, the principal greenhouse gas, is not amenable to “end of pipe” solutions.

- Increased emphasis has been maintained on the importance of public transport and urban traffic management initiatives. For example, the proportion of capital investment directed at public transport infrastructure under OPTRANS (1994-1999) was approximately 24% compared to 9% under the 1989-1993 programme.
- Inefficiencies and bottlenecks in the national road network are being systematically targeted, and a comprehensive National Roads Needs Study has been carried out to bring greater method and objectivity to this process.
- Implementation of the Dublin Transportation Initiative is being intensified through a DTO Short Term Action Plan initiated in Autumn 1998 which provides for an expanded programme of quality bus corridors and cycle lanes and improved bus, DART and suburban rail services.
- Marketing of leaded petrol has been prohibited and mandatory car testing introduced.
- The operation of the EIA system since 1989 has clearly been beneficial in helping to minimise the adverse, and maximise the positive effects of individual transport infrastructure projects. That the system has teeth is shown in several significant modifications of major projects, and in the rejection of projects in a number of cases.
- The Strategic Planning Guidelines for the Greater Dublin Area, the update of the DTI Strategy, the planning guidelines on residential density, and the Retail Planning guidelines (both of which have national application) provide the basis for better co-ordination and investment in planning and transport issues.
- Development of demand management policies, e.g. enhanced public transport priority, economic instruments, and better co-ordination of land use/transportation policies etc., which have an important role in sustainable transport.

### 3.3 National Roads Priority (2000-2006)

#### 3.3.1 Objectives

The objectives of the National Roads Priority are

- to improve the reliability of the road transport system by upgrading major inter-urban routes to motorway/high quality dual carriageway standard, removing

bottlenecks, remedying capacity deficiencies and reducing absolute journey times and journey time variance

- to improve internal road transport infrastructure between regions and within regions, contribute to the competitiveness of the productive sector and foster balanced regional development
- to facilitate better access to and from the main ports and airports with the main objective of offsetting the negative effects of peripherality
- to contribute to sustainable transport policies, facilitating continued economic growth and regional development while ensuring a high level of environmental protection
- to help achieve the objectives of the Government Strategy for Road Safety in relation to the reduction in fatalities and serious injuries caused by road accidents.

### 3.3.2 Overview

The total planned investment under this Priority over the period 2000-2006 is €6.748 billion (£5.314 billion). Of the total investment, €870 million (£685 million) is co-financed by the ERDF through a contribution of €530 million (£417 million). The total investment also includes a projected contribution of €231 million (£182 million) from the Cohesion Fund. An overview of the investment under this Priority is shown in Table 3.4.

Table 3.4

National Roads Priority 2000-2006  
Investment (€ million)

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
National Roads	6,748.45	869.62	530.22	339.40	5,878.83	231.20
<b>Total</b>	<b>6,748.45</b>	<b>869.62</b>	<b>530.22</b>	<b>339.40</b>	<b>5,878.83</b>	<b>231.20</b>

*Note: The amounts shown for Cohesion Fund assistance are indicative and subject to individual European Commission decisions to be taken on projects in the light of the Strategic Reference Frameworks. National funding to match such Cohesion Fund assistance will be provided from non-ERDF co-financed resources.*

The measure has been classified as a public good type intervention on the basis of the typology developed by the ESRI in the Mid-Term Review of the 1994 to 1999 CSF. This reflects the role of national roads as part of the core infrastructure necessary to facilitate economic and social development, maintain competitiveness and support more balanced regional development.

### 3.3.3 State aid

No State aids will be provided under this Priority. In general, the provision of infrastructure by the public sector does not fall within the scope of State aid rules provided that access to infrastructure is guaranteed for all potential users on equal terms. The National Roads Priority falls within this description. In the case of infrastructure provided through the Public Private Partnership mechanism, competitive tenders open to all actual and potential competitors will ensure compliance with the rules.

### 3.3.4 National Roads Measure

The National Roads Priority will be implemented through one measure, the National Roads Measure. Under the Measure, the development strategy for national roads will focus on

- development of five major inter-urban routes (Dublin to the Border, Dublin to Galway, Dublin to Cork, Dublin to Limerick, Dublin to Waterford) to motorway/high quality dual carriageway standard
- a programme of major improvement works on other national primary routes
- completion of the M50 and Dublin Port Tunnel
- improvement of national secondary routes of particular importance to economic development
- the continuing assignment, in the design and construction of road projects, of a high priority to the safety of road users.

On the five major inter-urban routes, the aim will be to complete these routes to motorway/high quality dual carriageway standard by 2006 and to achieve a minimum level of Service C (equivalent to a minimum of 96 kph average inter-urban speed) from completion of construction through to 2020; a higher level of service will in practice be commonly achieved.

It is estimated that the investment programme will result in significant time-savings on journeys. Table 3.5 provides an estimate of the expected impact in terms of time saved on major inter-urban routes.

Table 3.5

**Summary of Major Inter-urban Route Time Savings  
(minutes)**

<b>Route</b>	<b>Route Number</b>	<b>Observed Journey Time 1999</b>	<b>Journey Time on Scheme Completion</b>	<b>Time Saving</b>
Dublin-Border	N01	79.0	55.0	24.0
Dublin-Galway	N04/N06	157.0	121.0	36.0
Dublin-Limerick	N07	145.0	114.0	31.0
Dublin-Cork	N07/N08	205.0	147.0	58.0
Dublin-Waterford	N07/N09	125.0	94.0	31.0
<b>Total</b>		<b>711.0</b>	<b>531.0</b>	<b>180.0</b>

Source: NRA

In the Dublin area, the priority will be

- to complete the M50 C Ring through completion of the Southern Cross and South Eastern Motorways
- to increase the capacity of the M50
- to complete the Dublin Port Tunnel.

The NRA has concluded, on the basis of a strategic study, that the Dublin Eastern By-Pass Motorway is viable on environmental, transportation, engineering and economic grounds and is suitable, with public sector subvention, for delivery as a PPP project. Accordingly, the NRA has been advised to include the project in the national roads development programme and to proceed with its planning and design, with final budgetary commitment in relation to the project to be sought from the Government at an appropriate later stage.

National secondary roads are the medium distance through-routes connecting important towns, serving medium to large geographical areas and linking to the national primary routes to form the homogeneous network of national roads. In view of the dominant transport role played by national primary roads and the significant investment requirements relating to them, it will be necessary to prioritise the national secondary roads that will benefit from the funding available over the period of the programme. The strategy for these roads will accordingly concentrate on routes which are of particular importance to economic development, including links and cross

country connections to the strategic corridors, roads serving key ports, airports, tourist areas, industry, and multi-purpose roads. Investment on national secondary routes will address the most acute deficiencies, concentrating on the elimination of bottlenecks, bridge renewal and improving the most deficient sections of road pavement.

### 3.3.5 Investment

The total planned investment in the National Roads Measure over the period 2000 to 2006 is €6.748 billion (IR£5.314 billion). Of this, an indicative €2.48 billion will be spent in the BMW Region and an indicative €4.27 billion in the S&E Region.

Additional funding may, depending on progress, be required to undertake the programme outlined above and will be set out in more detail in the Programme Complement.

The investment to be ERDF assisted under this measure will be concentrated on specific projects (to be nominated by the NRA) on the following routes:

- (a) the Dublin/Border, Cork/Dublin, Limerick/Dublin, Galway/Dublin, Waterford/Dublin routes
- (b) other national primary routes, particularly those serving the west and north-west.

Investment on national roads that will benefit from Cohesion Fund assistance will be concentrated on sections of the M1 and the M50 routes.

### 3.3.6 Public Private Partnership

It is envisaged that a substantial proportion of the National Roads Measure will be implemented by means of concession type PPPs which involve the private sector designing, building, operating and financing the infrastructure. Eleven projects have already been identified for PPP based on user toll financing -

- Waterford by-pass (N25)
- Limerick Southern Ring Road, Phase II, incorporating a western river crossing
- Second West Link Bridge, Dublin (M50)
- Dundalk Western by-pass (N1/M1)
- Clonee/Kells (N3)
- Kilcock/Kinnegad (N4)
- Oranmore – N6 East (N4/N6)
- Portlaoise/Castletown (N7)
- Nenagh/Limerick (N7)
- Portlaoise/Cullahill (N8)
- Fermoy by-pass (N8)

The potential for a PPP approach to the development of further sections of the main national primary routes is being explored by the NRA.

The road projects concerned will be constructed to a high standard – motorway or high quality dual carriageway – and will provide road users with an enhanced level of service. Toll roads will be constructed as additions to the current network of national roads rather than provided by means of the improvement of existing roads. Road users will accordingly be in a position to choose whether to use the existing toll-free network route for their journeys or the new tolled routes. Actual charges will be determined in accordance with procedures contained in the Roads Act 1993, which provide for public consultation on tolling proposals brought forward by the NRA, public enquiries and consideration of submissions, before determining whether or not the proposals should be adopted.

### 3.4 Public Transport Priority (2000-2006)

#### 3.4.1 Objectives

The key objectives of the Priority are to improve public transport services. More specifically, the objectives are as follows -

##### *Transport in the Greater Dublin Area*

- to address the projected growth in trip demand through a combination of investment in transport infrastructure and facilities and demand management measures
- to reduce the relative attraction of commuting to work by private car, thereby curtailing congestion and vehicular emissions
- to increase accessibility for all, particularly mobility impaired and disabled people
- to better reflect evolving commuter travel patterns by providing for a spatial distribution of public transport that addresses the requirements of the Strategic Planning Guidelines for the Greater Dublin Area
- to support sustainable development.

##### *National public transport services*

- to upgrade the mainline rail infrastructure, rolling stock and facilities so as to improve the safety of the network, increase the physical capacity of the railway to cater for growing passenger demand, and improve the quality, speed and reliability of services
- to upgrade public transport services in the cities of Cork, Limerick, Galway and Waterford so as to tackle increasing congestion, provide an alternative to car commuting and support the local economies
- to enhance the national bus network outside the main cities.

## 3.4.2 Overview

The total planned investment under this Priority over the period 2000-2006 is €3.051 billion (£2.403 billion). Of the total investment, €414 million (£326 million) is co-financed by the ERDF through a contribution of €209 million (£165 million). The total investment also includes a contribution of €56 million (£44 million) from the Cohesion Fund. An overview of the investment under this Priority is shown in Table 3.6.

Table 3.6

**Public Transport Priority 2000-2006  
Investment (€ million)**

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
Dublin Public Transport	2,073.30	355.80	190.49	165.31	1,717.50	25.65
National Public Transport	978.00	58.67	18.59	40.08	919.33	30.18
<b>Total</b>	<b>3,051.30</b>	<b>414.47</b>	<b>209.08</b>	<b>205.39</b>	<b>2,636.83</b>	<b>55.83</b>

*Note: The amounts shown for Cohesion Fund assistance are indicative and subject to individual European Commission decisions to be taken on projects in the light of the Strategic Reference Frameworks. National funding to match such Cohesion Fund assistance will be provided from non-ERDF co-financed resources.*

The measures have been classified as public good type interventions on the basis of the typology developed by the ESRI in the Mid-Term Review of the 1994 to 1999 CSF. This reflects the role of public transport as the core infrastructure necessary to facilitate economic and social development, maintain competitiveness and support more balanced regional development. The measures also have a re-distributional effect through providing access to transport services to those without access to private transport.

### 3.4.3 State aid

The aid being granted to the CIE companies is covered by the block exemption in Article 73 (ex Article 77) of the Treaty relating to the needs of co-ordination of transport and obligations of public service. Furthermore, general State Aid rules do not apply in the rail sector. The Dublin Public Transport and National Public Transport measures accordingly comply with State Aid rules.

### 3.4.4 Measures

The Public Transport Priority will be implemented through two measures, the DTI Public Transport and Traffic Management Measure and the National Public Transport Services Measure.

#### 1. *DTI Public Transport and Traffic Management Measure*

The total planned investment in the DTI Public Transport and Traffic Management Measure over the period 2000 to 2006 is €2.073 billion (£1.633 billion). As a Dublin-based measure, this money is allocated to the S&E Region only.

ERDF support will be concentrated on projects which can be shown to fall within an agreed overall transport strategy based on a physical plan for the Dublin area. This should encompass the construction of Line A of the Light Rail project and the improvement of bus and rail services by, for example, the purchase of additional vehicles and the enhancement of infrastructure and facilities.

Under the DTI Public Transport and Traffic Management Measure, the development strategy for public transport in the Greater Dublin Area will focus investment on

- a) development of the light rail network (LUAS)
- b) implementation of a short-term development programme for suburban rail designed to exploit much more fully the potential of the network
- c) preparation and commencement of a longer-term suburban rail development strategy
- d) developing, extending and increasing the capacity of the bus network
- e) promotion of greater transport integration
- f) traffic management measures.

#### **Light Rail Network**

The introduction of light rail (LUAS) is an integral part of plans to revitalise Dublin's

public transport system. The main objective over the period 2000-2006 will be to complete three lines:

- Line A (Tallaght to Abbey Street)
- Line B (Sandyford to St. Stephen's Green)
- Line C (Abbey Street to Connolly Station – subject to statutory procedure).

In addition the Government, on 31 July 2000, announced it had approved, in principle, the development of a metro in Dublin. This will involve

- the upgrading of LUAS Line B and its extension to Shanganagh (to the south) and to Swords via Dublin Airport (to the north) and incorporating a central tunnel
- a line from the Shanganagh-Swords line via Finglas, Blanchardstown and Clondalkin to Tallaght
- a line from Citywest to the City Centre via Tallaght and Kimmage, connecting to the central tunnel on the Shanganagh-Swords line.

The metro will be developed on a public private partnership basis, and is a key element of the Dublin Transportation Office's medium to long-term integrated transportation strategy which includes additional on-street light rail lines.

### **Suburban Rail Development**

The development strategy for suburban rail will focus on

- upgrading of the Greystones to Arklow line
- upgrading the link between Heuston and Connolly stations
- quadrupling of track on the Kildare line to separate long-distance and suburban services
- provision of new or improved Dublin suburban rail stations and new depot facilities
- city centre re-signalling and crossover works to provide for additional peak hour services

with the objective of increasing capacity by 39% on the DART service and by 26% on the suburban rail service.

A Strategic Rail Study has been undertaken in respect of a longer-term suburban rail programme. It has proposed measures to address capacity and operational constraints that impede the development of the existing network as well as assessing certain proposals for new rail lines. A public private partnership approach to the implementation of these projects will be examined. Further development of the suburban rail network will be consistent with the land use strategy as set out in the Strategic Planning Guidelines for the Greater Dublin Area. In addition, complementarity and synergies will be sought with the Development Plans of the Local Authorities.

### **Dublin Bus Network Development**

The main objective of the bus development programme will be to increase the capacity and improve the quality, reliability, frequency and speed of bus services through

- the expansion of the bus network to meet demand, including the provision of orbital and local services to complement the existing largely radial network
- the phased purchase of additional buses to increase passenger capacity and meet the development requirements of the network
- fleet replacement and renewal, including the provision of a sufficient quality fleet for the growing QBC network.

The aim will be to achieve an increase of 28% in the bus fleet with an extra 22,000 seats. Total planned investment over the period 2000-2006 is €300 million (IR£236 million) which includes ongoing fleet replacement, equipment renewal and public transport integration projects such as Real Time Passenger Information and interchange facilities.

In recognition of the changing pattern of travel in the Greater Dublin Area, Dublin Bus and Bus Éireann, working with consultants, completed a comprehensive review of the bus network in June 2000. The purpose of the review is to ensure an improved matching of service provision with transport demand, changing travel patterns and customer requirements. The development of the bus network will also be consistent with the Strategic Planning Guidelines for the Greater Dublin Area.

### **Public Transport Integration Programme**

There is a recognised need to improve the integration of public transport services in the Greater Dublin Area, both within and between the different modes. The suburban rail programme, the enhancement of the bus network and the development of LUAS all highlight the importance of ensuring that services are provided in an integrated manner so as to optimise the use of resources and more effectively meet travel demand in the Greater Dublin Area. The proposed integration programme will include

- the provision of 3,700 park and ride spaces in addition to the 2,700 spaces being provided under the current programme
- the development of public transport modes and interchange facilities to cater for intra-modal and intermodal transfers
- the introduction of integrated ticketing and real time passenger information.

Total planned investment over the period 2000-2006 is €62 million (IR£50 million).

## **DTI Traffic Management**

The investment in national roads and public transport will be complemented by an investment programme in traffic management measures focusing in particular on

- promoting a modal shift to bus-based public transport, particularly through the further development of bus priority measures and Quality Bus Corridors
- assigning agreed priorities to the various traffic modes in a safe and efficient manner and in accordance with the function, shape and use of the road or street in question
- developing cycling and walking as transport modes in their own right, and as part of multi-mode journeys
- achieving the optimum from existing assets
- delivering efficient movement of people and goods.

Total planned investment over the period 2000-2006 is €306 million (IR£241 million).

## **2. *National Public Transport Services Measure***

The development strategy for national public transport services will focus on

- mainline rail, including railway safety improvements and renewal and upgrading of track
- improvements in public transport services outside the Greater Dublin Area and improving accessibility to public transport services for mobility-impaired and disabled people.

The total planned investment under the National Public Transport Measure over the period 2000-2006 is €978 million (£770 million). Of this, €479 million will be spent in the BMW Region and €500 million in the S&E Region.

ERDF support will be used to support public transport infrastructure and services in Cork, Limerick, Galway and Waterford. Support will also be provided for improved access for mobility-impaired people at rail and bus stations nationally.

## **Mainline Rail**

An indicative €705 million (IR£555 million) will be spent on revitalising the mainline railway network. Of this, approximately €520 million (IR£409 million) will be spent on implementing the Railway Safety Programme 2000-2003. This Programme involves major expenditure on track renewal, signalling, level crossings, bridges and other infrastructure, and most importantly, on improved safety management systems. In addition to the safety expenditure, a further indicative €185 million (£146 million) will be spent on railway renewal and upgrading work including the purchase of additional rolling stock and the upgrading of stations.

The entire InterCity network will benefit from the mainline safety investment programme and mainline renewal programme included in this measure. By 2003, the Sligo, Tralee, Waterford and Rosslare routes will have modern continuously-welded rail over their entire lengths. The Belfast, Cork, Limerick and Galway routes are already completed.

In the Cork area, provision has been made for additional diesel railcars for commuter services and for possible new stations subject to feasibility studies. Two new diesel railcars are also proposed for commuter services in the Limerick area.

### **National Public Transport**

Investment totalling €273 million (£215 million) is planned for national public transport other than the mainline railway network. This investment will comprise the following elements:

- upgrading public transport in Cork, Limerick, Galway and Waterford as part of measures to deal with increased traffic congestion
- upgrading the Bus Éireann services in urban and rural areas
- improving access for mobility-impaired and disabled people to existing bus and rail stations and other facilities that will not benefit under other elements of the Priority
- pilot rural public transport projects.

## **3.5 Cross-border co-operation**

### **3.5.1 Overall approach**

The Irish Government and the United Kingdom Government recognise the importance of transport infrastructure links to the closer integration of the economies of Ireland and Northern Ireland. A key aim of transport development policy during the period of this Programme will be to improve infrastructure and integration within and between road and public transport networks in both jurisdictions so as to provide a more coherent and sustainable strategic transport network for the island as a whole.

### **3.5.2 National roads**

In relation to roads, a high level of ongoing contact and co-operation exists between the road authorities on both sides of the border with regular meetings taking place on matters of mutual interest. There have been several tangible results to date arising from good co-operation and working relations between both sides in road transport matters, including arrangements for a joint study on the N1 (Newry/Dundalk).

The National Roads Priority provides for an estimated €400 million (IR£315) investment on the N1/M1 section of the Dublin/Belfast routes. The programme also

provides for investment on the following national primary routes serving the border region:

N2 (Dublin/Monaghan linking to Derry)

N3 (Dublin/Cavan/Belturbet linking to Enniskillen)

N13 – N15 (Sligo/Donegal/Lifford/Letterkenny linking to Derry)

N16 (Sligo/Blacklion linking to Dungannon/Larne).

This investment will be complemented by ongoing co-ordination, co-operation and exchange of information in the context of cross-border co-operation.

### 3.5.3 Public transport

There has already been substantial North/South co-operation between Translink in Northern Ireland and Iarnrod Éireann in the South on the Dublin-Belfast “Enterprise” service which attracted EU funding. The upgrading of the Enterprise rail link was a very successful joint venture in terms of marketing and operation.

The designation of the Dublin-Belfast rail line as part of a priority TEN-T route is a reflection of the importance of this cross-border rail link. This underlines the importance of adequate infrastructure and transport services for cross-border social and economic development.

There has also been investment under the North/South INTERREG Programme which attracted EU funding for Infrastructure projects. This included contact between the respective authorities on both sides of the border. Joint Working Group meetings are convened biannually. There is also ongoing talks between Bus Éireann and Ulsterbus with regard to services which are jointly operated, including the development of a common fare system and collaboration on issues of mutual interest. During the INTERREG II Programme, £0.5million of ERDF aid was allocated to support investment in improvements to bus stations in the border region. This greatly improved customer facilities and comfort.

It is intended that these developments will be consolidated and expanded further over the period 2000-2006.

## 3.6 Supporting measures

### 3.6.1 The National Roads and Public Transport Priorities will be supported by other policies and measures including

- an enhanced national roads maintenance programme
- development of telematics and road safety measures
- a transport demand management strategy for the DTI area
- measures to improve access for disabled persons to public transport.

### 3.6.2 National road maintenance

For some time, maintenance expenditure on national roads has been insufficient to protect the substantial investment made in improvement works and to maintain the fabric of the network in an acceptable condition. Over the past ten years, the annual provision has actually declined when inflation is taken into account. While the extent of the national road network has remained relatively static, maintenance expenditure needs have increased due to a variety of factors including

- substantial increase in total vehicle kilometres of travel
- expansion in the fleet of heavy goods vehicles on Irish roads
- increase in permissible vehicle weights – particularly axle weight loadings which place significant physical demands on the road infrastructure.

In response to these deficiencies and needs and to protect the investment in the national roads network, a €457 million (£360 million) maintenance programme is proposed over the period 2000-2006. Of this total, €207 million is allocated to the BMW Region and €250 million to the S&E Region.

This programme will focus on priority tasks such as surface dressing, re-surfacing, drainage, and a range of other less costly, though equally important, matters, e.g. winter maintenance, weed control, renewal of markings and signs, traffic route lighting etc. The programme will cover the network of national roads (5,400 km) in accordance with pre-determined cycles to ensure that the fabric of the network is protected and to facilitate proper planning and budgetary arrangements.

A reasonable programme (cycle) of national road maintenance includes the following:

- surface dressing on a seven year cycle
- routine pavement overlay on a twenty year cycle
- annual routine maintenance
- maintenance and operation of public lighting.

### 3.6.3 Telematics

The NRA will investigate the potential application of telematics in the areas of road safety and traffic management. The objective from a traffic management perspective will be to make the best possible use of the existing road infrastructure.

The feasibility of establishing a pilot telematics project on the N7 at Kildare and Monasterevin is currently being investigated. This system would encompass incident detection, traffic management and, where appropriate, offer re-routing advice to road users by means of variable message signs (VMS) technology. The NRA in partnership with the Road Service, Northern Ireland, is participating in an Information and Management System for Multimodal Transport in Ireland and Northern Ireland (INSTANT). The project will comprise a feasibility study (phase 1) and a design study

(phase 2) for an integrated multimodal transport information and management system. The proposed system will initially focus on the Belfast–Dublin corridor and onward port and airport connections to Great Britain and France. The corridor forms part of the TEN-T and is also an integral element of the network of road and rail links which provide vital access to other parts of Ireland. The system will be generic and capable of being extended to other significant transport corridors within Ireland.

The basis of the system will be the existing Traffic Information and Control Centres in Belfast and Dublin. It is anticipated that these centres will extend their existing services to include the continuous exchange of information with each other and, where appropriate, with other centres in Great Britain and France. They will also receive on-line and off-line information from bus operators, rail, ferry, airport and other relevant bodies. Information concerning traffic conditions will be provided from a variety of sources such as the existing traffic control systems located in Dublin and Belfast. Development of these systems is an ongoing process and there may be opportunity to provide additional incident detection equipment and CCTV cameras at critical locations as enhancements of the system. It is anticipated that the system will reduce negative impacts of incidents (accidents, roadworks, ferry closures etc.) on vehicle queues and travel times. The system will also assist travellers' decisions on mode and route choice.

In the Greater Dublin region, the DTO will co-ordinate the development of telematics in order to ensure that the various systems are sufficiently integrated to work towards common traffic management strategies. The Update Strategy will provide a clear framework for developments in this area.

#### **3.6.4 Road safety measures**

The Government's Road Safety Strategy adopts a multi-faceted approach comprising a series of measures aimed at achieving a 20% reduction in road accident fatalities and serious injuries by the end of 2002 compared with the situation in 1997. The measures include engineering initiatives such as the following:

##### ***Traffic Calming***

Traffic Calming is an important application in the road safety management of national routes that pass through towns and villages. In the first instance, speed is reduced by altering the appearance of the road on the approach to the town/village through the use of gateways' and by further traffic management measures within the town itself.

The NRA has published a report entitled *Guidelines on Traffic Calming for Towns and Villages on National Routes* that outlines the nature of the works involved and will help ensure a uniformity of approach by local authorities throughout the country.

Over fifty Traffic Calming schemes have been completed on national routes in recent years and a five year plan has been prepared to complete a further fifty schemes between 2000 and 2004.

#### *Remedial Measures at High Risk Accident Locations*

This measure employs low cost engineering solutions and aims to deal with 400 high risk accident locations on national roads over the five years to 2002.

#### *Safety Audits*

The safety audit involves a detailed examination of new road schemes to ensure that safety principles have been successfully applied in the design of the road. Appropriate procedures are being developed for the wider application of road safety audits.

### **3.6.5 Transport demand management**

It is clear that meeting Ireland's needs for improved transport systems cannot be just a question of providing more physical infrastructure. While additional infrastructure is needed, it must be accompanied by flanking measures to ensure the efficient and effective use of the facilities provided. Demand management will be increasingly important as part of an integrated approach to meeting mobility needs, particularly in the large urban areas, in an environmentally sustainable manner. Some examples of transport demand management measures are as follows:

- facilitation of modal shift to public transport through QBCs and investment in public transport
- parking restraint
- the decision to impose tolls on the use of the proposed Dublin Port Tunnel
- better integration of land use and transportation planning have already either been introduced or proposed in the Dublin area
- vehicle registration tax has been restructured
- BIK taxation of employer-provided public transport passes has been removed
- the taxation ("benefit-in-kind") of private non-residential parking is being examined
- a preliminary review of the potential for road pricing in Dublin has been carried out.

It is envisaged that the Update of the DTI Strategy will build on the initiatives outlined above by providing a firm policy context for the development of a comprehensive Demand Management Strategy. The elements that could form part of this Strategy are along the following lines :

- managing peak demand through the encouragement of flexible working hours and innovative work practices amongst major employers, thereby reducing the intensity of the peak effect
- ensuring public transport availability over longer operating periods
- implementation of Mobility Management Plans, including parking space management
- providing specially designated parking spaces for those who start work earlier than the norm
- surcharging movements to and from car parks which occur during the peak period
- using vehicle and fuel taxation regimes to influence mode choice
- using land-use planning and development control mechanisms to exploit counter-peak public transport availability and capacities
- using parking supply and pricing policies to influence modal choice, especially for long-stay commuters
- using road-pricing mechanisms to manage road use, especially in the peak period
- using traffic management methods, e.g. queue relocation, metering, integrated telematics, new signal methods, etc.

While the Strategy will apply in the Dublin area in the first instance, it will assist in the development of demand management policies more generally.

At the national level, the National Climate Change Strategy will contain measures designed to limit/reduce greenhouse gas emissions from transport but which will also impact on transport demand.

### 3.6.6 Accessibility issues

Accessibility of public transport vehicles to both the general public and those who are mobility-impaired or disabled will be greatly enhanced in line with the Government's commitment to this area and with EU Policy. New and upgraded bus and rail stations, light rail vehicles and new suburban rail cars will be fully accessible to mobility-impaired and disabled people. All urban buses purchased under the plan will be low-floor. The CIÉ companies will establish special Accessibility Units.

A Public Transport Accessibility Committee will be established to advise the Minister for Public Enterprise in relation to the accessibility of public transport for mobility-impaired and disabled people and in particular

- on the accessibility aspects of proposed public transport
- on accessibility issues relating to existing public transport infrastructure facilities and services, including the making of recommendations on appropriate improvements to existing public transport infrastructure, facilities and services.

The Committee will be chaired by the Department of Public Enterprise and will include representatives of the CIÉ Operating Companies and organisations representing mobility-impaired and disabled people.

### 3.6.7 Service integration

The Bus Éireann network of Expressway and local stage carriage services is designed to allow interchange ability between local and long-distance services, e.g. a customer can get a local service from Dingle to Tralee where they can transfer to the Dublin service. In all instances a through ticket can be bought at the journeys starting point. In as far as possible, every effort is made by both Iarnród Éireann and Bus Éireann to enable interchange between local bus services and train.

## 3.7 Expected impact of the National Roads and Public Transport Priorities

### 3.7.1 Economic impact

The planned national roads and public transport investment will result in a major improvement of the internal transport network. The physical outputs outlined in para. 3.3.3 will result in substantial time savings on major inter-city routes, improved access to and within the regions, and reduced congestion on national routes. The public transport investment programme will result in a more extensive and higher quality public transport service that better meets the needs of these without access to car transport and provides an attractive alternative to commuting by car.

Investment in the road network has been shown to yield significant benefits to the economy. A report entitled *The Macro-Economic Effects of the Investment in Roads* that was undertaken as part of the Mid-Term Review of the OPTRANS quantified supply side benefits of £57 million per annum as at 1996, or £130,000 annually per million pounds spent on national road improvements. Many benefits were not quantified due to lack of information, such as the full beneficial impact on labour supply, environmental benefits and rising levels of savings in future years.

The savings that arise and that were quantified were as follows:

**Table 3.7**

**Savings from Investment in National Primary Roads (per annum)  
(£000)**

Time savings by commercial vehicles	11,500
Maintenance and capital savings by commercial vehicles	8,200
Time savings by cars	31,400
Reduced accident costs	5,700
Total savings	56,800
Total expenditure in OPTRANS national primary projects to end 1996	423,195
Annual savings per £ million spent in 1994-1996	134

The benefit of the 1994-1996 national primary roads investment in the year 2011 were also estimated. The report concluded that it was reasonable to assume that the benefits of the investment would increase over time given the expected growth in the economy over the coming decade or so.

Based on assumed annual increases in traffic of 3% per annum, it was estimated that the annual savings in 2011 would be £174 million or £411,000 per million pounds spent (in 1996 prices). These estimates exclude certain benefits that could not be quantified because of lack of information. The estimated savings indicate that the benefits from investment in national primary roads will increase at an average annual rate of 7.8% over the period 1996 to 2011.

In addition to the supply side savings outlined above, the roads improvement programme gives rise to significant employment. On the basis of planned expenditure on national roads in 2000, some 4,000 people will be employed in the design, planning, construction and supervision of national road schemes. When indirect and induced employment effects are taken into account, this rises to 7,000. Over the period 2000-2006, expenditure on national roads improvements will provide average annual employment of 11,500 persons (direct and indirect). \*

Consultants commissioned by Iarnród Éireann to undertake an evaluation of mainline rail track renewal and signalling investments reported in August 1999 that, of the sections studied, Lavistown – Waterford, Killarney – Tralee, Carrick-on-Shannon – Sligo, Cork – Cobh and Athlone – Westport show an adequate rate of return. The sections that provide a good return are those that have either relatively high traffic volumes or have low track renewal capital costs or both. The low track renewal costs reflect the fact that in some cases, the bulk of the line section and thus the bulk of the total route has already been brought up to standard. The report also supports the upgrading of the signalling on the Athlone – Westport and Arklow – Rosslare routes.

Consultants were commissioned by Iarnród Éireann in July 1999 to undertake a strategic review of the Dublin Suburban Rail network. The report concludes that an east/west tunnel linking the Northern and/or Western suburban lines with the Kildare line is essential for the expansion of the suburban rail network in line with the recommendations of the Strategic Planning Guidelines for the Greater Dublin Area. This would facilitate increased frequencies along existing services and the development of new suburban rail spurs to Dublin Airport, Blanchardstown/Navan and to the City West business park. The report underlines the need for the short-term investment programme included in the NDP, demonstrates that the scale of benefits generated in an outline cost benefit analysis of the preferred option is high and stressed that the strategic advantages for Dublin of a city-wide heavy and light rail network are great.

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\* These employment projections are based on a study *A Note on the Employment Content of Major Road Improvement Schemes in Ireland* (January 1995) undertaken by DKM consultants in association with John Fitzgerald, ESRI.

The strategic review of the network of bus services in the Greater Dublin Area covers both the hinterland and metropolitan areas. In the metropolitan area, the report recommends the completion of the 12 QBCs as planned, extension of QBCs across the CBD, additional radial and orbital QBCs, increased frequency of services and better integration of services. A larger increase in the fleet size than that included in the NDP is recommended along with the required garaging facilities. The report recommends that a network of services across the hinterland should be introduced to enable the development of this region without reinforcing car dependency. This would build on existing radial routes by the addition of orbital services linking the main population centres, supplemented by local services in and around these. Maynooth is suggested as the main hub for the regional services, based on its location within the regional road network and its good links to Dublin.

### 3.7.2 Impact on the environment

The following, as a pilot eco-audit of the National Roads and Public Transport Priorities, outlines the expected environmental impact of the Priority by reference to a number of themes of particular relevance, namely

- nature conservation
- community and land severance
- transport sector emissions/air quality
- urban environment and traffic congestion.

Pilot eco-audit check lists for the National Roads and Public Transport Priorities are included in Annex III. The check list is qualitative in nature having regard to the information available.

#### *Nature Conservation, Community and Land Severance*

Road improvement projects can have significant environmental impacts in terms of noise, visual intrusion, property severance and effects on habitats. These impacts can be positive or negative depending on the sensitivity with which projects are planned, the particular circumstances involved and the scope available to consider route options, alternative traffic management strategies, etc. Well-designed road improvements and good route selection and design minimise visual intrusion and impacts on habitats and avoid severance of communities and land.

In the National Roads Priority, particular care will be taken in the route selection for and design of these projects in order to minimise their impacts (for example by seeking to avoid demolition of houses and minimising severance, by-passing sensitive areas, minimising the impact on flora and fauna and avoiding visual intrusion). New project guidelines being implemented by the NRA will take particular account of the need to avoid impacting on SACs and SPAs and will recommend that designers make every reasonable effort to avoid such areas altogether. With careful planning and adequate prior public consultation, these projects will have little or no adverse

environmental effects and will deliver positive impacts in terms of reduced road accidents and vehicle emissions.

The planning and EIA processes will add significantly to the store of information on the environment and cultural heritage of the localities concerned. The information so obtained can be used to improve general environmental protection and management strategies with a relevance beyond that of the individual road project. In particular, considerable knowledge of the archaeological heritage has been acquired as a result of investigations carried out in the course of road planning and construction.

The Roads Act, 1993, provides a single comprehensive procedure for EIA for all road projects likely to have significant effects on the environment. This requires the local authority to prepare a detailed environmental impact statement on the project. This must be submitted to the competent authority along with an application for approval of the project. (While the Minister for the Environment and Local Government is at present the competent authority, it is proposed to transfer this function to An Bord Pleanála.) Members of the general public and certain organisations are given an opportunity to make written submissions to the competent authority. Where the project is the subject of a public inquiry (mandatory for all motorway and protected road projects), the inspector may hear evidence on the likely environmental impact of the project. Before making its decision, the competent authority must consider the environmental impact statement, any written submissions made and the report of the inspector at the public inquiry. This procedure provides an effective and transparent way of dealing with environmental issues in the context of an overall evaluation of a proposed project. Similar procedures exist in relation to the construction of the proposed light rail network in Dublin.

#### *Transport Sector Emissions/Air Quality*

Transport is acknowledged in all developed countries as one of the most difficult challenges to achieving more sustainable development. Society's requirement for mobility of people and goods has been growing and this trend has been accelerated by the increasing integration of EU and global markets.

Air quality in Ireland is generally good and we meet all current mandatory ambient air quality standards. However, transport is a significant source of some pollutants, particularly in heavily trafficked urban areas. The trends for emissions from individual vehicles for most pollutants are downwards as fuel technology and technology for removing pollutants from exhaust emissions continue to improve. However, the increasing numbers of vehicles on the road and increasing vehicle miles travelled are negating the technological improvements in some respects.

New standards for ambient air quality relating to a range of pollutants, including NO<sub>x</sub> and PM<sub>10</sub>, are due to come into operation at EU level over the coming years. Proposals for standards are also expected in respect of CO, benzene, lead and poly-aromatic hydrocarbons, which are transport related emissions. Where existing

standards are being revised, the new standards will be significantly more onerous than at present.

The major growth in the transport sector, particularly the passenger car sector, has counteracted reductions in NO<sub>x</sub> emissions from the power generation and industrial sectors which were achieved during the last decade. Emissions from transport now account for 44% of total emissions. However, all ambient air level standards are currently within mandatory EU and national limits. Emissions from individual vehicles are set to fall with an increasing use of catalytic convertor technology and the introduction of new vehicle standards between 2000 and 2005. No standard currently exists for PM<sub>10</sub>, the primary traffic source of which is diesel-engined vehicles. While reductions in emissions from individual vehicles are expected with changes in fuels and engine technologies between 2000 and 2005, baseline studies carried out by the EPA and Dublin Corporation in Dublin indicate that the proposed new EU standards will be difficult to achieve in heavily trafficked urban areas.

In relation to climate change, Ireland has a legally binding target under the Kyoto Protocol to limit the growth in a basket of six greenhouse gases to 13% above 1990 levels by the commitment period 2008-2012. Irish emissions of greenhouse gases in 1990 were equivalent to 53.752 million tonnes (Mt) of (CO<sub>2</sub>), and our target is to limit emissions to 60.74Mt by 2012. Without action, it is projected that net annual emissions would increase by up to 34.9% to 72.504 Mt by 2010. This essentially means that Ireland's target is to reduce emissions by up to 11.764 Mt CO<sub>2</sub> equivalent per annum for the commitment period 2008-2012.

Of all sectors, the transport sector is expected to show the greatest increase in emissions over the next decade, predominately emissions of CO<sub>2</sub>. Current projections of CO<sub>2</sub> emissions for 2000 show an increase of 31.9%, or 28.9% when counted on a net basis. In 1990, the transport sector contributed approximately 15.7% of Ireland's CO<sub>2</sub> emissions and 9.5% of emissions in the basket of six greenhouse gases.

Within the transport sector, there has been a dramatic increase in private transport ownership and usage, resulting in a substantial growth in traffic over the past number of years. While fuel and emissions efficiencies within each class of car are increasing, there have been trends towards purchase of larger vehicles, reducing the overall fuel efficiency of the fleet. As a result, transport sector greenhouse gases are set to grow further both in absolute terms and as a proportion of total greenhouse gas emissions. In absolute terms, they are forecast to increase by over 200% in the period from 1990 to 2010. Transport sector emission increases are forecast to account for an estimated 59.1% of the total emissions increase to 2010. The proportion of the total basket of greenhouse gas emissions attributable to the sector in 2010 is estimated at 18.9%, double the proportion in 1990.

In common with other countries, Ireland faces a difficult challenge in attaining sustainable transport and, in particular, limiting the growth in greenhouse gas emissions. A broadly based package of integrated and mutually reinforcing measures will be required to tackle greenhouse gas emissions in the transport sector.

In broad terms, the challenge for all pollutants from the transport sector will have to be met through a combination of the following:

- the active encouragement of more efficient road vehicles, having regard to EU voluntary agreements with vehicle manufacturers on CO<sub>2</sub> emissions, standards for other vehicle emissions, and standards for fuel quality under the EU Auto Oil Programme
- the promotion of beneficial modal shifts to public transport to reduce the dependence on the private car, particularly in urban areas
- integrated demand management, i.e. through policies such as economic instruments and land use planning to reduce or moderate the demand for mobility or to cater for it more rationally.

### *Urban Environment and Traffic Congestion*

Many towns situated on national roads have substantial traffic problems such as congestion, traffic encroachment into the main shopping streets and even residential areas, pedestrian/vehicular conflict and increased road accidents, noise and air pollution. Traffic has reduced the attractiveness of these towns for residents, shoppers and tourists. The provision of by-passes and relief roads alleviates these problems and makes the towns safer, quieter, cleaner and more attractive places in which to live and work and to visit. By-passes also remove from residential areas vehicles carrying dangerous goods.

Apart from measures in Dublin, integrated traffic management strategies have been or are being developed for the major cities to respond to the transport issues arising there. These strategies place significant emphasis on public transport, cycling and walking – as well as appropriate road development – to meet mobility needs.

Of the total planned Operational Programme investment in roads and public transport, 31% will be spent on public transport measures, mainly in urban areas. This compares to 9% and 24% of the roads and public transport total on the 1989-1993 and 1994-1999 programmes respectively. This substantial increase in investment will facilitate major improvements in public transport infrastructure and rolling stock. These improvements will be complemented by traffic management measures designed to promote a beneficial modal shift particularly in urban areas.

### *Conclusion*

The overall environmental impact of the National Roads and Public Transport Priorities is expected to be positive. The programme is consistent with the objectives and strategy outlined in the *Sustainable Development Strategy*. The infrastructure investment programme proposed will result in

- a more efficient inter-urban road network which will remove traffic from many towns and villages that are currently experiencing heavy through traffic with associated adverse impacts on the environment and quality of life generally
- major improvements to urban and regional public transport services as an alternative to car based transport.

Road development projects will be subject to comprehensive EIA to minimise the adverse impacts and maximise their beneficial impacts. The investment programme also recognises that infrastructure development requires to be complemented by supporting measures in the areas of transport demand management and telematics. Finally, to assist in future policy development, a study on the environmental impacts of current and prospective future levels of traffic and the scope for action to be taken by Government has been completed.

### 3.7.3 Gender impact

The Priorities can reasonably be expected to make a positive contribution to overall national equal opportunities objectives and policies and complement the gender-specific measures that are being taken in other programmes.

A substantial part of the investment in the Priorities – 31% – is devoted to the provision and improvement of public transport. This will be of significant benefit to women, who account for a high proportion of users of public transport. On a more general level, the improved infrastructure provided for under the Priorities will contribute to maintaining growth and competitiveness in the economy. The result of continued economic buoyancy will be to maintain the exceptional growth in the labour force and, in particular, the participation rate of women in paid employment, that has occurred over the last ten years. This will result in greater opportunities for women to enter the job market, with consequential improvements in the economic position and welfare of women.

### 3.7.4 Poverty

The Priorities will generally have a positive impact on poverty. The strong economic growth that will be sustained by improved transport infrastructure will maintain the current high level of job creation. As poverty is strongly correlated with unemployment and dependence on the social welfare system generally, continuing the high level of job creation is the most effective means of tackling poverty. Measures being taken under the Employment and Human Resources Development Operational Programme will be directed at ensuring that those who currently may not have the skills to exploit the present and potential job opportunities will be able to obtain those skills. In tandem with a range of policies and measures that are being put in place under the Programme and the NDP, the Priorities will contribute significantly to meeting the objectives of the National Anti-Poverty Strategy.

### 3.7.5 Rural impact

The Priorities will have a positive impact on rural areas. The improved infrastructure that will be put in place will generally facilitate greater and more cost effective travel throughout the country. This will greatly facilitate rural areas by improving the access of the inhabitants of rural areas to employment and services throughout the county. Improved access will also boost the attractiveness of rural areas as locations for economic activities and provide improved support for industries such as tourism, fishing and agri-food, which tend to be strongest in rural areas.

As is evident from the Tables in Annex 1, there is a strong emphasis in all measures of this programme on investment in the BMW region, which has a higher proportion of the population living outside urban areas. The strengthening of infrastructure within the BMW region will, in conjunction with parallel measures in other operational programmes, facilitate a narrowing of the regional imbalances, both economic and social, within the State.

# Chapter 4 *Environmental Infrastructure*

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## 4.1 Introduction

Environmental infrastructure has a particular significance in relation to the promotion of more sustainable patterns of development, both in terms of facilitating necessary development and mitigating any resultant negative environmental impacts. Significant progress was made under the Operational Programme for Environmental Services 1994-1999 in achieving compliance with national and EU objectives in regard to water and waste water services. This Priority represents a continuation and expansion of the key water policy objectives and measures to meet continuing increases in demand for services.

## 4.2 Ex-Ante Evaluation

### 4.2.1 Water and waste water services

Ireland is experiencing unprecedented levels of economic growth that are placing increasing pressure on water services infrastructure. This is compounded by the need to

- rehabilitate much of the existing infrastructure that is inadequate in relation to modern requirements and inefficient in water conservation terms
- address environmental concerns and meet more ambitious national and EU environmental quality standards.

The overall objective of this Priority is to facilitate development that is both environmentally and economically sustainable. In this context, the provision of water and waste water infrastructure is essential, not only to maintain strong economic growth, but also to ensure that such expansion does not impose environmental costs that are in themselves unacceptable and which act as a barrier to future growth.

Key aspects of the unprecedented growth of recent years include

- growth in manufacturing output, particularly in the chemicals and food processing sectors which are particularly water intensive
- continued significant growth in the tourist industry which is heavily reliant on high environmental quality
- population increase leading to increased housing demand which places further pressure on the water services infrastructure.

This pattern of development has placed substantial further pressure on an already deficient infrastructure and inhibited achievement of desired environmental objectives. This pressure is indicated by

- many public water supply networks having little or no spare capacity to meet development requirements, as evidenced by assessments of needs carried out by local authorities
- the need to address limited difficulties with public supplies standards as indicated by monitoring reports carried out by the Environmental Protection Agency (EPA)
- weaknesses in the water distribution system leading to substantial losses through leakage of in excess of 50% in some areas, including Dublin
- the continuing increase in pollution of river channels
- the relatively low level of population served by public waste water treatment facilities
- the significant proportion of existing waste water treatment systems requiring upgrading to meet national and EU standards (it is estimated that €1,460 million (£1,150 million) will be required to provide upgraded treatment facilities to comply with the Urban Waste Water Treatment (UWWT) Directive)
- the need for an ongoing programme to provide necessary services, including water and sewerage services, to open up land for development (including the projected 500,000 additional housing units over the next ten years) on a sustainable basis.

#### 4.2.2 Water quality

Water quality in Ireland is generally good and compares favourably with the position in other EU Member States. Over recent decades, however, there has been a continuing increase in the incidence of slight and moderate pollution in rivers. In the ten years up to 1997, the length of unpolluted river channel has decreased from some 78% to 67%. The main threat to water quality is eutrophication due to excess inputs of phosphorous from agriculture, sewage, industry and other sources.

A comprehensive, catchment-based, national strategy is in place to combat inputs of phosphorous from all sources. Major catchment-based projects are well underway in relation to Loughs Derg, Ree and Leane and the Rivers Boyne, Liffey and Suir. The objective for the short-to-medium term is to establish such projects to address all inland and coastal waters. This strategy is supported by a major programme of investment in the provision and upgrading of waste water treatment plants, including the provision of phosphorous reduction/removal facilities where required. The strategy is also supported by controls on discharges from industrial facilities and by measures, including the REPS, applied in relation to agricultural activities.

The planned investment under this Priority is intended to have the effect of increasing the lake area considered satisfactory from 65% to approaching 90% and the length of unpolluted river from 70% to 80%.

#### 4.2.3 Coastal protection

The Republic of Ireland has a coastline of some 5,800km in length, including 3,000km of "soft" coastline made up of sandy beaches, sand dunes and clay cliffs. Studies

indicate that up to 1,500km of the coastline is at risk from erosion, with nearly 500km in need of immediate attention. Erosion rates in areas of particular sensitivity can be up to one to two metres per year. Current indications are that the existing problems could be exacerbated by natural changes, such as rises in sea levels and increases in storm frequency and wave heights that are predicted as consequences of global warming.

The coastline is an important amenity and is also of considerable economic and ecological significance. Coastal erosion threatens public property (in the form of state-owned foreshore) and public infrastructure such as roads and rail lines. It also puts at risk important tourist amenities such as seafronts and promenades, as well as natural features such as beaches, dunes, habitats and areas of ecological diversity that are important from both the amenity and ecological perspectives. Erosion is, therefore, a serious threat socially, economically and environmentally.

Coastal protection works undertaken at priority locations under the Operational Programme for Environmental Services 1994-1999 amounted to some £5 million. Schemes carried out have provided protection from erosion at key tourist locations (e.g. Bray, Co. Wicklow and Rosslare Strand, Co. Wexford), as well as at other sites of economic, amenity or natural importance. It is clear, nevertheless, that there is still a pressing need for protection schemes at many locations right around the coast if serious economic damage, loss of natural features and damage to ecosystems is to be prevented or limited.

### 4.3 Environmental Infrastructure Priority (2000-2006)

#### 4.3.1 Objectives

Having regard to the foregoing review of the current situation, the key objectives of the Priority are to

- provide a water supply and waste water infrastructure to support development
- secure compliance with EU and national water quality and waste water standards
- remedy existing, and prevent future, water pollution
- preserve and protect water resources from point source pollution for a range of beneficial uses, including tourism, agriculture, fishing, food and aquaculture development
- address the most important and urgent instances of coastal erosion.

The Priority is designed to facilitate the achievement of high environmental standards while meeting national infrastructural needs.

The objectives of the Priority will be achieved through the implementation of the following measures:

- Waste Water Treatment
- Water Supply
- Management and Rehabilitation of Infrastructure
- Infrastructural Support for Expanded Economic Activity
- Coastal Protection.

The predicted effect of these measures will be to put in place sufficient capital and management infrastructure in the water supply and waste water services to support the ongoing drive for sustainable economic development. The measures will also contribute to the resolution of problems in relation to the supply of serviced building land and, in particular, meeting demand for new housing. Ongoing growth in the tourism and agri-food sectors, which depend on Ireland's clean environmental image to maintain their competitive advantage, will be facilitated and new investment encouraged.

The Priority's investment will also be set in the context of a more comprehensive application of the polluter pays principle and an increasing emphasis on Public Private Partnerships. Investment by the local authority sector will also make a significant contribution to the achievement of the overall aims of the Priority. The Government has already approved a framework that will result in full cost recovery from non-domestic users of the marginal capital and operational costs of providing them with water and waste water services. The cost of providing water services to domestic users will be met in a transparent way through the capital budget of the Department of the Environment and Local Government and the Local Government Fund.

The objectives of the Priority as outlined above take account of the key objectives of the NDP which are

- the continuation of sustainable national economic and employment growth
- consolidating and improving Ireland's international competitiveness
- fostering balanced regional development
- promoting social inclusion.

The planned investment represents a threefold increase over the previous national plan and this substantial commitment will ensure that the objectives of the NDP are achievable.

#### 4.3.2 Overview

The total planned investment under this Priority over the period 2000-2006 is €3.853 billion (£3.034 billion). Of the total investment, €125.15 million (£98.56 million) is co-financed by the ERDF through a contribution of €71 million (£56 million). The total investment also includes a contribution of €280 million (£221 million) from the Cohesion Fund. An overview of total planned investment under this Priority over the period 2000-2006 is shown in Table 4.1.

Table 4.1

**Environmental Infrastructure Priority 2000-2006  
Investment (€ million)**

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
Waste Water	1,657.15	125.15	71.10	54.05	1,532.00	280.35
Water Supply	579.32	0	0	0	579.32	0
Management and Rehab. of Infrastructure	862.16	0	0	0	862.16	0
Infrastructural Support	702.05	0	0	0	702.05	0
Coastal Protection	52.01	0	0	0	52.01	0
<b>Total</b>	<b>3,852.69</b>	<b>125.15</b>	<b>71.10</b>	<b>54.05</b>	<b>3,727.54</b>	<b>280.35</b>

*Note: The amounts shown for Cohesion Fund assistance are indicative and subject to individual European Commission decisions to be taken on projects in the light of proposed Strategic Reference Frameworks. National funding to match such Cohesion Fund assistance will be provided from non-ERDF co-financed resources.*

Of the amount shown for Cohesion Fund assistance in relation to the Waste Water Measure, €33 million is to be spent on waste management projects that are included in the Operational Programmes for the BMW and the S&E Regions.

Of the total investment, the initial indicative regional distributions are estimated at €1.062 billion (£0.836 billion) for the BMW Region and €2.791 billion (£2.198 billion) for the S&E Region.

The measures have been classified as public good type interventions on the basis of the typology developed by the ESRI in the Mid-Term Review of the 1994 to 1999 CSF. This reflects the role of environmental and water services as necessary to facilitate economic and social development, maintain competitiveness and support more balanced regional development. Improvement in these services is also essential in ensuring the protection of the environment while facilitating increased economic activity.

### 4.3.3 State aid

No State aids will be provided under this Priority. In general, the provision of infrastructure by the public sector does not fall within the scope of State aid rules, provided that access to infrastructure is guaranteed for all potential users on equal terms. The Measures under this Priority fall within this description. In the case of infrastructure provided through the Public Private Partnership mechanism, competitive tenders open to all actual and potential competitors will ensure compliance with the rules.

### 4.3.4 Waste Water Treatment Measure

This measure will focus on

- provision of new waste water collection, treatment and disposal systems
- upgrading of existing sewerage infrastructure
- development and expansion of river catchment monitoring and management.

It will facilitate compliance with relevant EU environmental standards and help to maintain water quality standards in the course of continued economic expansion.

The UWWT Directive (91/271/EEC) requires secondary treatment or equivalent for all agglomerations greater than 2,000 p.e. by 2005 as well as upgrades or extension to waste water collection systems. The two key dates are end-2000, by which time all discharges of 15,000 p.e. must undergo secondary treatment, and end-2005, by which time all discharges of 2,000 p.e. or more must undergo secondary treatment. Significant investment was made over the period of the last Water Services Investment Programme. Notwithstanding this, investment of €925 million (£728 million) is being provided to complete twenty-four waste water schemes that are required by end-2000. A further €535 million (£421 million) is being provided for sixty-two additional schemes to meet 2005 requirements.

The total planned investment in this measure over the period will be €1.657 billion (£1.305 billion). Of the total investment, €125 million (£99 million) is co-financed by the EU through a contribution of €71 million (£56 million) from the ERDF. The total investment also includes a contribution of €280 million (£221 million) from the Cohesion Fund.

ERDF and Cohesion funding will play a significant role in financing this Measure. The aim will be to ensure that a modern sewage treatment infrastructure is put in place in order to eliminate, as far as possible, serious pollution of rivers, and to reverse and minimise moderate river pollution levels and eutrophication in lakes. Full compliance with the UWWT Directive will be a central objective and will be facilitated in part by the Cohesion Fund assistance. Expansion of catchment monitoring and management systems will facilitate ongoing sustainable economic and social development through the integration of state-of-the-art monitoring methods with best environmental

practices in the chosen catchments. ERDF co-financing of €71m will make a significant contribution to schemes aimed at maximising the potential for sustainable and balanced regional economic development.

### 4.3.5 Water Supply Measure

This Measure will focus on

- the provision of additional water treatment and distribution capacity in response to needs identified by local authorities, the results of the National Water Study and the need to maintain water quality standards
- a programme of works to replace lead mains in accordance with the requirements of drinking water standards.

It is designed to achieve and maintain water quality standards, improve water supply in urban areas and complete water supply projects that are currently being advanced under the Water Services Investment Programme.

Consultants were engaged by the Department of the Environment and Local Government to undertake a comprehensive study of all large water supply schemes outside the greater Dublin area. The National Water Study looks at all aspects of water supply, including availability of raw water, treatment capacity requirements, sufficiency of water distribution systems in terms of capacity and condition, and associated management issues. This study and the 1996 Greater Dublin Water Supply Strategic Study will provide a reliable basis for the evaluation of detailed investment requirements in the water supply sector over the period of the Priority.

Total planned investment under this measure is €579 million (£456 million). Of this, €154 million will be spent in the BMW Region and €425 million in the S&E Region.

The aim will be to achieve a further reduction in the current volume of public water supplies that are not compliant with the requirements of the present and proposed EU Drinking Water Directives, and to meet water supply deficiencies by the provision of additional capacity. Together with the complementary investment proposals in the Management and Rehabilitation of Infrastructure Measure and the Infrastructural Support for Expanded Economic Activity Measure, the overall investment in water supply will underpin the efficiency and quality of the national water supply system, and provide increased capacity for continuing sustainable economic development.

### 4.3.6 Management and Rehabilitation of Infrastructure Measure

This Measure will focus on

- water conservation and leakage reduction having regard to the output of the National Water Study
- network rehabilitation to upgrade water distribution and waste water collection systems

- development of improved management systems, building on the work undertaken by the Technical Assistance Priority of the Operational Programme for Environmental Services 1994-1999.

It will help local authorities to develop improved management and operational practices and provide support for upgrading existing water services networks.

Total planned investment under this measure over the period is €862 million (£679 million). Of this, €227 million will be spent in the BMW Region and €635 million in the S&E Region.

The aim will be to upgrade water distribution and waste water collection systems in a planned manner in order to maintain high standards of water quality and protect the environment from leakage from waste water systems. Enhancement of the capability of local authorities to manage and operate water services infrastructure will maximise the value and effectiveness of successive Water Services Investment Programmes.

#### **4.3.7 Infrastructural Support for Expanded Economic Activity Measure**

This Measure will focus on water and waste water services investment required to support economic and social development, employment generation and the maintenance of high growth rates, particularly

- provision of serviced land for residential and commercial purposes (including almost 170 schemes already identified and significant further development)
- services in rural towns and villages, including almost seventy schemes already identified.

It is a key element of the strategy to address current housing supply and affordability issues. The planned investment will also assist rural towns and villages which may not have benefited heretofore in comparison with larger towns and cities, and will facilitate more balanced regional development.

Total planned investment under this measure over the period is €702 million (£553 million). Of this, €224 million will be spent in the BMW Region and €478 million in the S&E Region.

Grant assistance to individual schemes will continue to be provided at existing support levels. In the case of the Serviced Land Initiative, Exchequer funding is provided at a rate of 40% of the cost of the works with the balance provided by local authorities from their own resources, primarily through development levies. The aim will be to ensure that a water services infrastructural gap, which would act as a brake on sustainable economic development, does not emerge. This Measure will support, as far as possible, particular sectoral developments and particular forms of economic development, as well as facilitating the generation and maintenance of sustainable growth on a balanced regional basis.

A particular emphasis will be placed on the achievement of national housing policy objectives by easing market pressures and creating greater equilibrium between supply and demand with an anticipated easing of pressure on house prices.

### 4.3.8 Public Private Partnerships

The Priority includes provision for a minimum of €127 million (£100 million) of private finance to be invested in water supply projects over its term. It is envisaged that such projects will be implemented on a Design, Build, Operate and Finance (DBOF) basis. Approval has recently been given by the Department of the Environment and Local Government for the appointment of advisers to prepare tender documents on the basis of the Public Private Partnership approach for water supply projects in Limerick and Dublin.

Public private partnership arrangements funded by public capital will make a substantial contribution to the implementation of the Environmental Infrastructure Priority. For example, based on experience to date it is considered that Design, Build and Operate contracts offer potential benefits over traditional procurement for major waste water treatment projects, and this form of PPP arrangement funded from public sources will be an important mechanism for implementing this Measure. Consideration is also being given to a number of projects involving PPP arrangements in the context of the Serviced Land Initiative (Infrastructure Support for Expanded Economic Activity Measure).

### 4.3.9 Coastal Protection Measure

The objective of the Coastal Protection Measure will be to address, in accordance with clearly defined criteria and priorities, through a programme of public works, the most urgent and important instances of coastal erosion on the Irish coastline, with particular attention to the protection and preservation of

- State owned foreshore
- property owned by local authorities
- public infrastructure
- public and tourist amenities (including beach and dune systems)
- areas of ecological importance.

The strategy to deliver on this objective will give particular priority to works which

- protect public safety
- support the economic development or increase the economic potential of coastal regions
- provide essential environmental protection for features of ecological importance
- avert the need for costly remedial works, or replacement of infrastructure, at a later stage.

The programme of coastal protection works under this Measure will be complemented and underpinned by a research programme on coastal protection. This research will address the nature and extent of erosion problems at various locations and different types of coastlines in Ireland, and will seek to identify the most effective means, technically, financially and in environmental terms, of responding to particular instances and types of erosion.

The total planned investment under this measure is €52 million (£41 million). Expenditure on works of €26.8 million (£21.11 million) will take place in the S&E Region, which contains the greatest concentration of coastal erosion problems. Expenditure on works of €18.37 million (£14.47 million) will take place in the BMW Western region. This total expenditure of €45.17 million (£35.57 million) on works will be supported by an indicative national expenditure of €6.84 million (£5.4 million) on research related to coastal protection.

Performance under the Coastal Protection Measure will be monitored by reference to the number of projects undertaken and the extent of the protection provided by those projects, as well as the nature and value of the property, amenities or natural or ecological features to which protection is given.

#### 4.4 Cross border co-operation

The Environmental Infrastructure Priority will provide a background against which future North/South co-operation will be developed. The provision of improved water services infrastructure in the border counties will support economic and social development (including tourism, agri-business, etc.) in the region, to the benefit of communities on both sides of the border. Considerable progress has already been made on developing water quality management strategies for the Erne and Foyle river catchments. A cross-border working group under the auspices of the North/South Ministerial Council is advancing work in relation to management of river catchments and water quality issues generally. The potential for developing joint training initiatives with water authorities in Northern Ireland will also be explored with a view to exchanging best practices and achieving greater economies of scale. Ongoing co-operation on water services policy issues of mutual concern will be continued.

#### 4.5 Expected impact of Priority

##### 4.5.1 Economic and social impact

The planned investment in environmental infrastructure will result, inter alia, in a substantial up-grading and expansion of water and waste water facilities and will support

- the provision of additional serviced land to meet housing need

- the development and expansion of catchment-based monitoring and management of river water quality
- improved water conservation.

The improved environmental infrastructure will facilitate economic and social development, more balanced regional development and the better protection of water resources.

### 4.5.2 Impact on the environment

The following, as a pilot eco-audit of the Priority, outlines the expected environmental impact of the Priority. A pilot eco-audit check list is included in Annex III. The check list is qualitative in nature having regard to the information available.

The Sustainable Development Strategy states that a "sustainable water policy must be based on protection, management and prudent use of water resources in the interests of optimised environmental quality, and economic performance and efficiency". In this context, a key objective of the strategy is to secure the provision of water supply and waste water services in a manner consistent with the protection of the environment while fostering growth and protecting the health of individual citizens.

This approach is fully reflected in the NDP and the measures of this Priority. The NDP itself has been framed "taking into account the need for balance between environment and development, embodied in the concept of sustainable development, so that economic and social activity will not undermine the long-term productivity of supporting eco-systems". The overall approach foreseen in the NDP and reflected in this Priority is thus to provide for the type of infrastructural investment needed to support the continuation of the high levels of economic growth of recent years while maintaining existing high environmental standards and remedying deficiencies, e.g. in regard to the treatment of waste water. The ex-ante evaluation of the NDP also endorses the view that the investment in environmental infrastructure will give rise to positive effects.

The key aims of this Priority flow from the national and EU policy framework. The overall objective is to support economic and social development while achieving and maintaining high environmental standards. The measures will have a positive impact in terms of remedying existing negative environmental impacts, e.g. in regard to lake and river water quality, while ensuring that future growth is facilitated in a sustainable way. In particular, the Water Supply and Waste Water Treatment Measures are anticipated to realise this objective by

- providing the additional supply capacity necessary to support current and projected growth in population and the economy while maintaining high water quality
- ensuring compliance with the UWWT Directive (91/271/EEC).

A particular environmental concern for Ireland is the high level of water wastage identified by water studies and resulting from old and inadequate water supply infrastructure. The programme of network rehabilitation provided for in the Management and Rehabilitation of Infrastructure Measure is anticipated to contribute substantially to the achievement of national water conservation objectives.

The Infrastructural Support for Expanded Economic Activity Measure is intended to provide the serviced land capacity to support the sustainable expansion of the land available for residential and commercial purposes. A particular objective of the Measure is the easing of the pressure on housing supply by facilitating the achievement of equilibrium within the housing market and thus making a substantial contribution to the social aspects of sustainable development.

Overall, from an environmental perspective, the approach taken in the Priority is a balanced one designed to contribute to the legitimate national objective of increasing prosperity (which is a core objective of the NDP) while achieving the complementary environmental objectives which are an essential characteristic of national policy.

#### **4.5.3 Gender impact**

The essential objective of the Priority is to support sustainable economic development by providing water and waste water infrastructure and services to maintain and/or achieve national and EU public health and environmental standards.

The report prepared by the Monitoring Committee of the Operational Programme for Environmental Services 1994-1999 concluded in relation to investment in water and waste water services that "none of the measures appear to have an intentional or detectable bias towards men or women". However, the overall thrust of the investment may be expected to positively contribute to overall national equal opportunities objectives and policies. In so far as a strengthened capacity for further sustainable development may be seen to have benefits for society as a whole, it may be assumed that women as well as men will derive socio-economic advantage from the investment which will be made under the Priority.

#### **4.5.4 Impact on poverty**

In the context of the planned investment and its stated objectives, the Priority will have a positive impact on poverty. The investment framework will improve the quality of life for all users in a direct way by enhancing the quality and quantity of water services and, indirectly, by maximising protection of human health and the environment. The substantial support for sustainable development which the investment will provide will facilitate continued economic growth with positive consequences for employment and more affordable housing, thus impacting positively on levels of actual and relative poverty.

# Chapter 5 Sustainable Energy

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## 5.1 Introduction

The Irish energy market is characterised by increasing demand, scarce indigenous sources of energy, a high dependence on imports for our energy supply and limited interconnection. Unprecedented economic growth has resulted in increased energy demand over the past number of years and this trend is expected to continue. Total primary energy requirement increased by 58% between 1980 and 1998 and is projected to increase by a further 32% by 2010. A key element of Irish energy policy, in that context, is the need to ensure security of energy supply in the short to medium term at competitive prices. The fact that we have a small open economy underpins the need for a competitive energy supply sector as competitive energy prices are a key ingredient of economic competitiveness. At the same time environmental concerns and the imperative to meet Kyoto targets will impact on energy policy.

Against this background the key objectives of Irish energy policy are to

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

Key strategies being followed in relation to these objectives include

- the liberalisation of the electricity and gas markets
- the establishment of a Commission for Electricity Regulation to regulate the electricity market
- the diversification of fuel sources in electricity generation
- the maximisation of energy efficiency through Irish Energy Centre programmes
- the promotion of additional electricity generating capacity from renewable sources against a background of strong growth in energy demand.

## 5.2 Ex-Ante Evaluation

### 5.2.1 Electricity and gas supply

#### *Electricity*

Liberalisation of the electricity market has begun with the first phase of implementation of the European Union Electricity Directive through the Electricity Regulation Act, 1999. Approximately 30% of the market opened up with effect from 20 February 2000. This will increase to 40% of the market in 2002 with an effective 100% opening in five years time. Arrangements have been put in place to facilitate early trading in the liberalised part of the market. The market in electricity generated from

renewable, sustainable or alternative energy has been fully liberalised from February 2000.

A number of independent power producers have expressed an interest in building power generating capacity. Planning permission has been granted for three new power generating plants, each of which will provide an additional tranche of capacity. A number of other power generating plants are currently going through the planning process. The additional generating capacity is expected to address any short-term electricity demand over supply. In addition, plans are proceeding to upgrade the main electricity interconnector with Northern Ireland to almost double the existing capacity before the end of 2001.

### *Gas*

The European Union Gas Directive is already largely in force in Ireland. There has been provision for third party access in the gas market here since 1995, with customers consuming in excess of 9 million therms of gas per annum (representing more than 75% of the market) having the ability to choose their supplier, and parties other than Bord Gáis Éireann (BGE) are entitled to build pipelines.

Based on forecasts of final demand for natural gas, there is adequate capacity in the natural gas network to meet final demand until 2003. New infrastructure will have to be put in place by then (e.g. a new interconnector to Britain or Northern Ireland or a pipeline to the Corrib discovery if it proves to be commercial). Following the opening of the electricity market, BGE has received application for capacity in the natural gas network to fuel new electricity generating stations which, in aggregate, significantly exceed the capacity which is available in the immediate short term. In order to address this problem, the Minister for Public Enterprise decided that a fixed amount of capacity in the natural gas network should be reserved specifically for the purposes of fuelling new gas-fired electricity generating stations and that a selection mechanism should be devised to determine which of the prospective power producers should be given access to the available capacity in the natural gas network.

### *Infrastructure Development*

The NDP recognises the importance of the energy infrastructure to overall development – national, regional, economic and social. The existence of a high quality energy transmission and distribution infrastructure, including increased interconnection with the Northern Ireland and European grids, will be essential in order to meet the demands of the growing economy as a whole. At the same time, the network must be capable of meeting the objectives of reducing the disparities between and within the BMW and S&E Regions and developing the potential of both Regions to contribute to the greatest possible extent to the continuing prosperity of the country.

The overall objective in relation to energy infrastructure is to ensure the most effective and efficient provision of energy services across all regions.

With the liberalisation of the electricity and gas markets, it is envisaged that the bulk of capital investment needs in the power and gas sectors will be met by the energy industry on the basis of commercial criteria, appropriate demand and investment potential. Over the period 2000 to 2005, total investment planned by the ESB will exceed £2 billion, with over two thirds of this sum earmarked for improvements and additions to the electricity transmission and distribution networks. This investment will be funded by the ESB itself through a combination of its own resources and borrowings (where necessary). Equally, gas transmission infrastructure should be funded on a commercial basis.

### 5.2.2 Energy and the environment

The Government's commitment to environmentally sustainable development of the energy sector is signified by the publication in September 1999 of a Green Paper on Sustainable Energy. The Green Paper specifies that intensified promotion of energy efficiency and the development of significant renewable energy electricity generation will be central to energy policy in the context of the Kyoto commitments. Under the EU burden sharing agreement arising out of the Kyoto Protocol, Ireland must limit greenhouse gas emissions by 2008-2012 to an increase of 13% over 1990 levels. On a business as usual basis, this limit will be significantly exceeded by 2010. Energy related CO<sub>2</sub> emissions account for most of the growth.

Programmes and measures tailored to all energy consuming sectors will be needed to reduce levels of energy consumption below the business as usual forecast. There will also be a need to exploit opportunities for fuel switching in the power generation sector and to have recourse to the flexibility mechanisms of the Kyoto Protocol. It is essential that total greenhouse gas emissions be reduced at least cost to the Irish economy by 2008-2012. The scale of the task in the time available is large. By 2005 Ireland must be in a position to point to demonstrable progress in complying with the Kyoto Protocol. In order to give impetus to energy related CO<sub>2</sub> abatement at national level, this Programme provides for expenditure totalling £146m on activities and programmes which will assist Ireland in complying with the Kyoto Protocol.

### 5.2.3 Energy conservation

The Irish Energy Centre was established in 1994 for the purpose of delivering the energy efficiency measures of the Economic Infrastructure OP (1994-1999). It was also assigned an information and support function with regard to renewables. The Centre's mandate was to promote the development of an energy efficient economy with particular regard to improving competitiveness, employment in industry, and environmental impact while contributing to the wider awareness of energy efficiency opportunities and renewable energy potential.

The measures funded through the Economic Infrastructure OP were of two kinds – direct and indirect. The direct measures were co-funded by industry and offered financial support for energy audits and energy efficient investments. Indirect measures had wider application and covered information, advice and support (including the establishment of the Centre itself).

A preliminary assessment of the programme shows that it exceeded its target savings of £40 million and that it raised the levels of activity in several target areas – most notably building energy management systems, combined heat and power (CHP), boiler service companies, and energy auditing. At a macro-economic level, it has improved the energy efficiency of the economy by 1-2% at a cost to public funds of some £18 million (1999 prices).

Striking success was achieved with the Self-Audit Programme, a scheme for large, energy intensive industry where rates of improvement of 1-2% per annum were achieved. Similarly the high profile information and awareness campaigns delivered through and around energy awareness week have affected about 100,000 purchase decisions while engaging the principal utilities in a co-ordinated campaign to market the benefits of energy efficiency.

Learning from the progress made over the period 1994-1999, it is clear that there is substantial scope for an intensified energy conservation programme to generate substantial economic, energy and environmental benefits.

In accordance with the proposals in the Green Paper on Sustainable Energy, the Irish Energy Centre will become a separate statutory body with its own Board of Directors. The resources necessary to fulfil its new mandate and its role in implementing the measures required under this Priority will be made available.

#### **5.2.4 Alternative/Renewable energy**

The Alternative Energy Requirement (AER) programme was launched in 1996 as the primary support mechanism for the development of electricity generation from renewable sources. Four competitions have been held for rights to generate green electricity and sell the output to the ESB at guaranteed prices related to winning bids in the competitive AER process. Under this programme, 108 MWe is now operational and a number of projects under the more recent AER 111 competition are still at various stages of development. In September 1999, a significantly increased target of 500 MWe in additional generating capacity from renewables in the period 2000-2005 was set by the Government. This target is expected to be met by continuing existing market mechanisms and by opportunities presented in the liberalised green electricity market.

It must be recognised, however, that prevailing economic and technical conditions continue to disadvantage renewable energy technologies compared to conventional electricity generating technologies and further proportionate support measures are required. There are infrastructural constraints to the widespread deployment of renewable energy technologies; the electricity network is not designed to take electricity from remote locations but rather to dispatch electricity from large thermal power plants in the transmission and distribution network to points of consumption. The siting of renewable sourced electricity generating stations, particularly wind energy, is dictated by the fuel source which is typically at remote locations where the

existing electricity network is weakest due to the dispersed nature of electricity loads. The capacity limit at remote locations is an immediate impediment to the development of renewable energy powered electricity generation stations. Other technical barriers associated with remote sites include steady-state voltage, flicker, harmonics and voltage imbalance. These network deficiencies exacerbate the competitive disadvantages facing renewable energy sourced electricity generators.

### 5.3 Sustainable Energy Priority (2000-2006)

#### 5.3.1 Objectives

Having regard to the foregoing review of the current situation the key objectives of the Sustainable Energy Priority are

- the development and implementation of an intensified energy conservation/efficiency programme
- the promotion of alternative energy sources.

The objectives of the Priority will be achieved through the implementation of the following measures:

- (a) an energy conservation measure
- (b) an alternative/renewable energy measure.

The investment in the Energy Programme concentrates on those areas – energy conservation and renewable energy – where there is a need to promote the uptake of emerging technologies and programmes and measures to effect least cost reductions in energy CO<sub>2</sub> emissions.

#### 5.3.2 Overview

The total planned investment under this Priority over the period 2000-2006 is €222.52 million (£175 million). Of the total investment, €68.28 million (£53.77 million) is co-financed by the ERDF through a contribution of €43.42 million (£34 million). An overview of this investment is shown in Table 5.1

Table 5.1

**Sustainable Energy Priority 2000-2006  
Investment (€ million)**

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
Energy Conservation	155.69	13.69	7.94	5.75	142.00	0
Alternative/ Renewable Energy	66.83	54.59	35.48	19.11	12.24	0
<b>Total</b>	<b>222.52</b>	<b>68.28</b>	<b>43.42</b>	<b>24.86</b>	<b>154.24</b>	<b>0</b>

Using the typology developed by the ESRI in the Mid-Term Review of the 1994 to 1999 CSF, both measures have been classified as public good and corrective subsidy type interventions. Energy conservation coupled with the development of renewable and alternative energy sources will complement economic and infrastructural development, while assisting in the conservation and protection of natural resources and the environment.

### 5.3.3 State aid

No State aids will be provided under this Priority. The Energy Conservation Measure does not consist of any State aid and the first two elements of the measure meet the requirements of the Community Frameworks for State Aid for Research and Development and for Environmental Protection. Under the Alternative/Renewable Energy Measure, the strategic reinforcement and upgrading of the electricity network to facilitate alternative and renewable energy projects involves the provision of infrastructure by the public sector to which access is guaranteed for all potential users on equal terms. As such, it does not fall within the scope of State aid rules.

### 5.3.4 Energy Conservation Measure

This Measure will focus on

- an intensified energy conservation/efficiency programmes to be delivered through an enlarged Irish Energy Centre – €46.81 million (£36.87m)

- energy conservation research, decentralisation and development activities – €36.67 million (£28.88m)
- an energy conservation initiative for pre-1980 housing/public sector buildings – €72.21 million (£56.87m).

The Irish Energy Centre will be the main conduit for delivery of the Measure and will be strengthened in terms of staffing and resources to carry out that role and the significantly increased mandate foreseen for the centre in the Green Paper on Sustainable Energy. The Centre will prepare a multi-annual Plan of programmes and measures which will be submitted to the Minister for Public Enterprise for approval. The Plan will quantify the benefits of the measures proposed and provide for regular evaluation of their effectiveness.

In relation to research, the objective will be to stimulate initiatives which will contribute to the achievement at least cost of Ireland's commitment under the Kyoto Protocol. It will focus on areas of market failure where there is an under-provision of R&D that is impeding the development and deployment of technologies and policy instruments relevant to Ireland's energy related CO<sub>2</sub> abatement. It is proposed to allocate the bulk of resources to demand side research and development and to concentrate supply side expenditure on renewable energy development and deployment. Actual R&D needs will be assessed in their market context and Irish industry will be engaged on a shared cost basis.

Almost all of the pre-1980 housing stock was built without insulation and there is a need to tackle that situation through the provision of incentives to improve efficiency. The approach will be to stimulate consumer awareness of energy efficiency measures and the development of an energy rating system for houses which will make energy performance explicit and a factor in home purchase decisions.

Total planned investment over the period 2000-2006 is €156 million (£123 million). Of this, €38 million will be spent in the BMW Region and €118 million in the S&E Region.

### 5.3.5 Alternative/Renewable Energy Measure

It is intended to significantly increase the contribution of renewable sources of energy to meeting Ireland's energy needs and a working target of 500 MWe in the period 2000-2005 has been set. A Renewable Energy Strategy Group is currently examining all aspects of, and obstacles to the further deployment of all renewable energy technologies including inter alia, grid connection issues, technical limits of the national electricity grid and factors impeding wider involvement in green electricity generating schemes. The Group will bring forward an agreed Integrated Resource Plan for renewables, including a Grid Upgrade Development Plan that will inform the investment programme and selection criteria. Precise programme details cannot be finalised in advance of the conclusion of these deliberations, scheduled for June 2000, but it is envisaged that the programme will aim to

- facilitate the strategic reinforcement and upgrading of the electricity network in order to redress the weaknesses and grid constraints to accommodate connection of renewable energy projects. This capital investment will be based on an agreed Grid Upgrade Development Plan and is additional to the extensive rural network renewal programme currently being undertaken by ESB.
- support the delivery at least cost \* of an additional 500 MWe of renewable energy based electricity generating plant compared to conventional capacity of the order of 4,000 MWe in the period 2000-2005
- encourage new entrants to the renewable energy market by (i) offering additional support to a limited number of small scale projects in proven technologies and (ii) providing selective support for feasibility studies
- increase peripheral confidence in the sector, e.g. among finance houses and retail customers, and further awareness in the capital markets of the new investment opportunities in renewable energy.

Total planned investment over the period 2000-2006 is €67million (£53m). Of this €40 million will be spent in the BMW Region and €27 million in the S&E Region.

## 5.4 Cross-border co-operation

The Commission, the Irish Government and the United Kingdom Government recognise the importance of infrastructure development and links, including the energy sector, to the closer integration of the economies of Ireland and Northern Ireland and there has been a significant degree of ongoing consultation and co-operation for many years at official level between the administrations in Belfast and Dublin. Ministers have agreed that there is a great body of further work to be carried out on both sides of the Border where a common approach would be of benefit to consumers. They have agreed, therefore, to consider the possibilities for the progressive development of an all island energy market, including the scope for legislative, fiscal or regulatory initiatives by the authorities, either jointly or separately, which would encourage convergence in the interest of business and consumers, reduce or eliminate differences and avoid the creation of new obstacles to further cross-border business development.

As a first step in this process the administrations in Dublin and Belfast have agreed to commission a series of cross-border studies in the energy area. This assignment will call for the preparation of "information" reports on the energy sectors in both jurisdictions and a draft report on future options.

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\* The national programme is compliant with EU procurement rules; prices offered to green electricity producers are based on a competitive tendering scheme.

Under the Sustainable Energy Priority, an indicative sum of €253,948 is being earmarked to cover the cost of this exercise and an ERDF contribution at the rate of 70% is being sought.

## 5.5 Expected impact on the environment of Priority

The following, as a pilot eco-audit, outlines the expected environmental impact of the Priority.

A pilot eco-audit check list is included in Annex III. The check list is qualitative in nature, having regard to the information available.

One of the key objectives of Irish energy policy is to ensure environmentally sustainable energy production and consumption. Both Measures within the Priority are consistent with, and make a contribution towards achieving this objective.

### *Energy Conservation Measure*

The intensified Energy Conservation Measure will result in more efficient energy use in the domestic and non-domestic sectors, thereby

- further de-coupling Ireland's strong economic growth from growth in energy consumption
- curbing the need for increased energy supply infrastructure, in particular, electricity generation and distribution networks
- benefiting the environment through curbs in the growth in emissions to the environment from energy generation and consumption, in particular SO<sub>2</sub> and NO<sub>2</sub>.

### *Alternative/Renewable Energy Measure*

The Alternative/Renewable Energy Measure will generate significant environmental benefits through a proportionate reduction in Ireland's very high reliance of fossil fuels, in particular oil, for electricity generation purposes.

The impact of the measures on energy emissions will be quantified as part of the Plan to be prepared by the Irish Energy Centre (paragraph 5.3.4 refers).

The working target of an additional 500 MWe of Renewable Energy in the period of 2000-2005 will be met mainly by an increased deployment of wind energy. Wind energy is viewed generally as having a positive global impact. However, wind farms are generally positioned in remote areas where wind speeds are high and which are not accustomed to development generally. As a result, there is the possibility of conflict between the development of wind farms and other land use priorities for these areas, in particular tourism and amenity. The local impact can sometimes be perceived

as negative, with fears expressed in relation to the visual impact, threat to livelihoods, noise levels, electromagnetic radiation levels, impact on birds and other wildlife and safety concerns.

Visual impacts are normally important for residents and tourists up to a distance of ten kilometres, with the main effects on amenity being concentrated within a few kilometres of the wind farm. Provided care is taken in site selection and turbine layout, and careful planning conditions are enforced, the true visual impacts of wind energy schemes are generally small and localised.

The effect of disturbance on bird populations is thought to be very small. Also the risk of collision between turbine blades and birds is minimal both for migrating birds and for birds from local habitats. Loss of habitat and disturbance to ecosystems are also not considered to be significant (*Benign Energy? The Environmental Implications of Renewables*, IEA 1999).

In summary, environmental impacts will be small, provided wind farms are not sited

- very close to centres of population
- in areas of nationally designated scenic importance
- close to important ornithological sites
- on important ecosystems sensitive to disruption by construction.

The Renewable Energy Strategy Group in its report *Strategy for Intensifying Wind Energy Deployment* (2000) has recommended a plan-led approach to wind energy development which centres on the identification of four distinct categories of areas to be identified with regard to wind farm deployment:

- strategic areas – these key areas are deemed to be eminently suitable for wind farm development and should be reserved for such purposes
- preferred areas – these key areas are suitable for wind farm development and should normally be granted planning permission unless specific local planning circumstances would support a decision to refuse permission in the context of the development plan
- areas open for consideration – applications for planning permission will be treated on their merits with the developer having a clear responsibility to demonstrate why the development should be granted permission
- no-go areas – these areas are identified as particularly unsuited to wind farm development.

The above areas may be identified by local authorities or on a regional or national basis and could all be incorporated into local authority development plans. This strategic approach should ensure that any negative environmental impact of the deployment of wind energy is minimised.

In order to maximise renewable energy potential and minimise environmental impact, a greater cohesion between energy policy and environmental/planning policy is essential. Local authority development plans are key instruments in providing clarity regarding locations that are suitable for wind farm development. Local authorities have available to them planning and technical advice in relation to such development, including, in particular, guidelines from the Minister for the Environment and Local Government to

- assist planning authorities in dealing with such planning applications and in making appropriate provision in development plans for future proposals
- assisting developers in preparing such proposals.

The planning system will respond to the recent Renewable Energy Strategy Group report and other developments in relation to wind energy in a proactive way in the context of the major reforms of the system which have been provided for in the Planning and Development Act, 2000.

# Chapter 6 Housing

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## 6.1 Introduction

This Priority takes into account an extensive range of studies of housing policy that have been undertaken. These include: *An Economic Assessment of Recent House Price Developments* (1998), *The Housing Market: An Economic Review and Assessment* and *the Housing Market in Ireland: An Economic Evaluation of Trends and Prospects*, all carried out on behalf of the Department of the Environment and Local Government, and the *Strategic Planning Guidelines for the Greater Dublin Area* (1999).

**This Priority is outside the scope of the Structural Funds and will not be co-financed by the European Union.**

## 6.2 Ex-Ante Evaluation

### 6.2.1 Factors influencing housing demand

#### *Population*

Ireland's population grew from 3,586,000 in 1994 to an estimated 3,745,000 in 1999, representing an increase of 4.4%. More significantly, growth in the key household formation 25-34 age group was 10% higher over the same period. Average household size also dropped from 3.28 in 1991 to 3.04 in 1998. While net emigration of 4,700 people was recorded in 1994, this trend was reversed in subsequent years with a net immigration figure of 18,500 in 1999. Over the six years 1994-1999, net immigration has boosted population numbers by almost 58,000 people. This trend of net immigration is expected to continue into the early part of this decade, with average annual net immigration to 2006 of about 15,000.

According to CSO forecasts, the population could rise by up to 11.7% from 3,626,000 in 1996 to 4,052,000 by 2006. More significantly, the numbers in the main household formation age group (25-34 years) are projected to rise by 141,000 by 2006, an increase of 27%. This significant rise will continue to keep housing demand at a high level. Average household size in Ireland is forecast to converge rapidly to the European average of 2.63.

#### *Economic Factors*

As is outlined in Chapter 2, the last decade experienced rapid and sustained economic growth and a decline in the rate of unemployment. This growth has brought about rising levels of real personal disposable income per capita and falling interest rates that have encouraged rapid expansion of mortgage credit.

Variable mortgage interest rates are also at historically low levels of between 4% and 4.5%, having fallen for a time to 3.9%. Disposable incomes will continue to rise with economic growth remaining strong and tax rates falling.

### 6.2.2 Demand for housing

This combination of factors has resulted in a significant increase in demand for private and social housing in recent years. This is evident from rising house prices and rents on the one hand and increased levels of social housing needs on the other. The ESRI Medium-Term Review of October 1999 estimated new housing requirements between 1996 and 2001 at an average of 44,000 units per annum and between 2001 and 2006 at an average of 48,000 units per annum. The first report referred to in para. 6.1 estimated that on average over 43,000 private units per annum will have to be built in the years to 2003 to meet current demand, reaching a peak of 46,000 private dwellings in 2003. The demographic factors detailed above coupled with the economic projections also point towards continued high demand for housing. In the light of these projections, it is estimated that it will be necessary to provide some 500,000 additional new dwellings, both social and private, over the coming ten years to meet demand.

### 6.2.3 Housing stock

The total housing stock in Ireland in 1994 stood at some 1,071,000 houses. By 1996, this had increased by 4% and the total stock is now estimated at 1,251,000 or some 17% greater than 1994. Ireland continues to have a relatively low housing stock in comparison to its population, with 334 houses per 1,000 population at end 1999. In 1994, the Irish housing stock per thousand population was 304, which was low compared to the UK's housing stock of 420 per thousand, 470 per thousand in Denmark, 440 per thousand in Germany and 440 per thousand in the EU as a whole. The provision of 500,000 additional dwellings over the coming ten years would bring the Irish housing stock to over 400 units per thousand population, depending on population growth.

### 6.2.4 Housing supply

The year 1999 was the fifth year of consecutive record house completions with 46,512 dwellings – an increase of 10% on the 1998 total as shown by Table 6.1.

**Table 6.1**  
**New House Completions (Units)**  
**1994 to 1999**

	Year						
	1993	1994	1995	1996	1997	1998	1999
Housing units	21,391	26,863	30,575	33,725	38,842	42,349	46,512

This rate of output, which amounts to 12.4 per thousand population, is the highest in Europe. Comparisons of annual housing output include 3 per thousand population in the UK, 3 per thousand in Denmark and 5 per thousand in France.

In 1998, £4,825 million was spent on residential housing construction in Ireland, almost double the total expenditure in 1995. Following five years of record growth in residential output, the proportion of GNP spent on housing construction increased from 7% in 1995 to 9.2% in 1998, with estimations for 1999 of 10.4%. Expenditure on housing since 1994 is shown in Table 6.2.

**Table 6.2**  
**Expenditure on housing – 1994-1999**

Year	Public capital expenditure on housing (£m)	Capital expenditure on local authority housing (£m)	Value of residential construction output (£m)	GNP (at 2000 prices) (£m)	Construction output as % of GNP
1994	283	122.0	2,188	32,885	7.7
1995	321	150.4	2,551	36,503	7.0
1996	336	159.4	3,273	40,146	8.2
1997	355	180.4	3,960	45,500	8.7
1998	384	194.4	4,825	52,183	9.2
1999	514	235.4	6,076 *	58,200	10.4 *

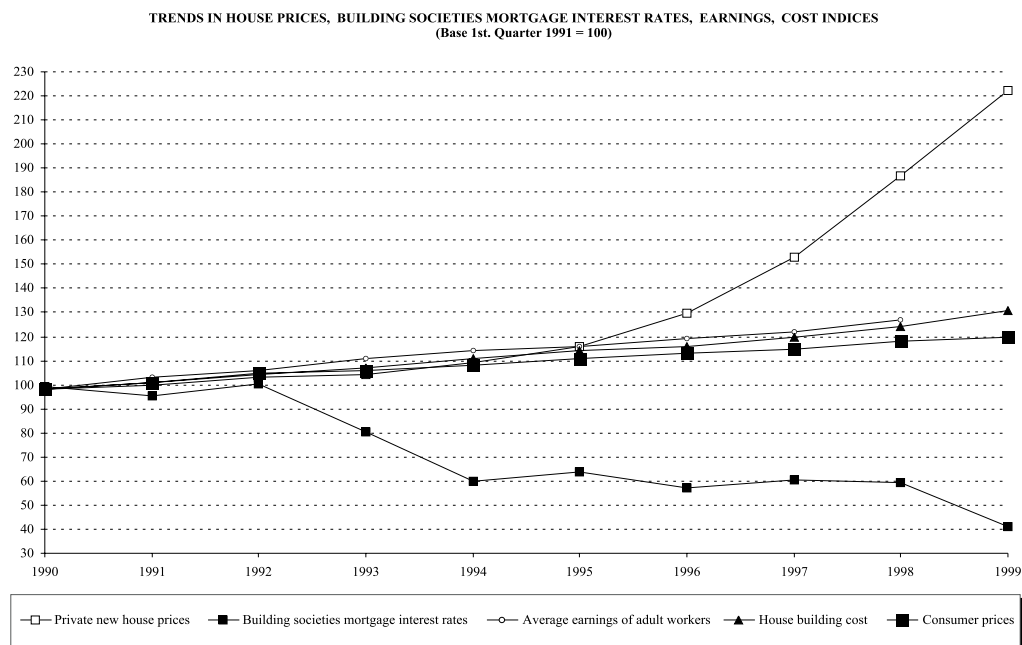
\*forecasted

### 6.2.5 Affordability

New house prices in 1994 averaged £57,281 nationally and £64,575 in Dublin while average second-hand prices were £55,033 and £65,188 respectively. However, there has been a surge in house prices in the intervening years, during which average house

prices have doubled. The housing demand increases outlined earlier were not initially matched by a sufficient supply response. House prices began to increase significantly in early 1996, especially in Dublin where the demand-supply imbalance first surfaced. Year-on-year price increases went into double figures in 1996 and peaked in mid-1998 with recorded increases of over 41% in Dublin second-hand prices. Mortgage interest rates fell from a peak of around 14% in 1993 and the country's general economic prosperity, improved living standards and disposable income levels contributed to increased demand for housing. The fall in interest rates eased somewhat the effect of house price increases on affordability.

Following very significant increases in prices during 1997 and 1998, the rate of house price inflation during 1999 eased. This has to be regarded positively, particularly against a background of continued economic growth and reduced interest rates.



### 6.2.6 Housing market measures

In response to rising house prices, a package of measures was introduced, aimed at maximising and expediting housing supply, securing house price stabilisation, addressing affordability issues and ensuring balanced growth of the market in the future. The principal measures taken to maximise supply include

- the introduction in 1997 of the Serviced Land Initiative to service 100,000 additional housing sites by the end of year 2000
- the promotion of increased housing density at appropriate locations through the publication of planning guidelines on Residential Densities in September 1999

- additional investment to remove any significant infrastructural constraints (roads, water, sewerage, public transport) to housing development
- arrangements for use of temporary water and sewerage facilities to allow the development of land for housing earlier than otherwise possible
- the publication in 1999 of *Strategic Planning Guidelines for the Greater Dublin Area* to provide a strategic approach to planning for future development and to achieve a more balanced distribution of population and economic activity
- measures to address delays in the planning system, including increased staffing of local authority planning departments and An Bord Pleanála
- the establishment in the Department of the Environment and Local Government of a co-ordinating Housing Supply Unit to ensure urgent and effective delivery of supply measures, to address any bottlenecks and to liaise with a similar group in the four Dublin local authorities.

Measures have also been introduced to assist affordability for lower income and first-time purchasers, particularly through the withdrawal of incentives for investment in housing by investors, exemptions from and reductions of stamp duty rates on house purchases, improvements in the local authority Shared Ownership scheme and the introduction of a local authority Affordable Housing Scheme. A grant of £3,000 continues to be available for first-time purchasers of new houses.

During the past two years significant investment in water, sewerage and roads infrastructure, specifically to open up land for residential development has led to substantial increases in the amount of such land.

### 6.2.7 Review of social housing policy

The 1991 policy document, *A Plan for Social Housing*, and the various new schemes it introduced were reviewed and refined in 1995 with the publication of *Social Housing – The Way Ahead*. Increased targets for social housing output were set with a corresponding substantial increase in resources. The emphasis of the strategy was on the following key areas of social housing

- further expansion of the local authority housing programme
- the continued development of the voluntary housing sector
- further measures to improve the response to homeless people
- further measures to ensure an adequate response to the accommodation needs of travellers
- improving the management of local authority housing estates, including greater tenant participation
- facilitating home ownership through new tenant purchase scheme terms and the shared ownership scheme

- registration of private residential tenancies to underpin other safeguards for tenants.

### 6.2.8 Shared ownership and affordable housing schemes

Under the shared ownership scheme, introduced in 1991, purchasers initially acquire – by way of a loan provided by the housing authority and savings – at least 40% of the equity in a house of their choice, which is purchased for them by the local authority. They then rent the remaining equity from the authority. Certain shared owners qualify for a subsidy towards rent payments. The shared owner must undertake to buy out the remaining equity by lump sum payments or by additional loans within twenty-five years. An Affordable Housing Scheme was launched in March 1999 to help lower income households to purchase their own homes. Under the scheme, local authorities provide additional new houses on land available to them in areas where house prices have created an affordability gap for lower income house purchasers. The houses are offered for sale to eligible purchasers at cost price and, accordingly, at a significant discount to the market value of comparable houses in the area. Purchasers are offered mortgage finance at favourable interest rates and a subsidy will reduce mortgage repayments further for households with incomes of up to £16,000.

### 6.2.9 Assessment of local authority housing needs

Comprehensive assessments of local authority housing needs are carried out every three years. The results published in 1993, 1996 and October 1999 provide a thorough assessment of the need for local authority housing and include an assessment of the number of households whose needs would best be met by other social housing options. These results inform policy in relation to provision for social housing output in general, and underpin the allocations to individual local authorities under the local-authority housing construction programme.

In 1993, the total net figure for those in need of local authority housing was 28,624 households. This net need assessed in 1996 decreased by 4% to 27,427 households but the 1999 figure of 39,176 households showed a large increase of 43% on the previous assessment. It should be noted that the 1996 and 1999 results are not strictly comparable to previous assessments. The assessments prior to 1996 included an unidentifiable number of households whose social housing need would be more appropriately met by alternative schemes (e.g. improvement works in lieu, mortgage allowance) which have been excluded from the later assessments. The proportion of households falling into the main categories that compose the net local authority housing need are set out in the Table 6.3.

Table 6.3

## Main Categories of Local Authority Housing Need (%)

Category	Year		
	1993	1996	1999
Unable to afford own accommodation	23	28	34
Living in overcrowded accommodation	25	22	21
Living in unfit accommodation	18	18	12
Involuntarily sharing accommodation	12	11	10

The 1999 assessment also identified 622 traveller households in need of permanent accommodation in caravan parks/halting sites and 1,406 households assessed as seeking local authority housing, compared with 734 and 749 traveller households respectively in 1996.

Using a broader definition of homeless persons (which includes those who have no accommodation, those in hostel and in Health Board accommodation), there were 5,234 persons categorised as homeless in the 1999 assessment, compared with 2,501 in 1996 and 2,667 in 1993. Of the 5,234 total, 2,219 homeless households were assessed as seeking local authority housing, an increase of 1,240 households on the 1996 figure.

#### 6.2.10 Social housing output

Table 6.4 shows the social housing output over the last six years.

**Table 6.4**  
**Social Housing Output 1994-1999 (Units)**

	1994	1995	1996	1997	1998	1999
Local Authority Housing	2,841	3,842	3,573	3,217	3,290	3,713
Vacancies in existing stock	3,245	3,609	3,930	3,795	3,378	3,121
Voluntary Housing						
- Capital Assistance	607	613	501	345	283	314
- Rental Subsidy	294	398	416	411	202	265
Improvement Works in lieu and extensions to LA housing	124	144	232	276	357	318
Mortgage Allowance	159	205	268	210	153	122
Shared Ownership	1,271	1,278	1,166	1,042	805	1,314
Affordable Housing Scheme	-	-	-	-	-	40
<b>Total</b>	<b>8,541</b>	<b>10,089</b>	<b>10,086</b>	<b>9,296</b>	<b>8,468</b>	<b>9,207</b>

These schemes do not represent the full extent of State housing support for those on low incomes. For instance, the estimated average monthly number of households in receipt of either rent or mortgage interest supplements under the Supplementary Welfare Allowances scheme has grown from 35,600 in 1994 to 47,700 in 1999. Under this scheme, unemployed persons and persons in certain employment and training schemes can receive supplements to help meet their rent or mortgage interest bills. The scheme is administered by the health boards and funded by the Department of Social Community and Family Affairs.

#### 6.2.11 Social housing provision

The results of the 1999 Assessment of Local Authority Housing Need have placed in sharp focus the need for an increased level of social housing provision. The significant increases in social housing investment, particularly since 1997, need to be enhanced yet further to meet the social housing needs of a higher number of households. The demographic factors exerting pressure on overall housing requirements are exerting similar pressure on the number of households reliant on the range of social housing measures to meet their housing needs.

Housing supply provisions in the Planning and Development Act, 2000, will underpin the provision of social and affordable housing and ensure that provision is made for housing all sections of the community in an integrated way. Local authorities will be required to formulate Housing Strategies as an integral component of their Development Plans. Local authorities will also be required to include specific objectives in their development plans for the provision of social and affordable housing based on the need identified in their housing strategies. Each housing strategy can provide that a specified percentage of not more than 20% of the land zoned for residential development or a mix of residential and other uses will be set aside in the development plan to meet these needs.

### **6.3 Housing Priority (2000-2006)**

#### **6.3.1 Private sector investment**

Approximately 85% of the total estimated housing requirement of 350,000 dwellings over the period 2000-2006 will be met by the private sector. The achievement of this level of output will require measures to bring forward land for housing more quickly, to deal effectively with any infrastructural constraints or other delays to development, and to utilise as effectively as possible the potential of available land. To this end, efforts to maximise the effectiveness of the measures referred to at para. 6.2.6 will be re-doubled and new measures introduced if required. The National Spatial Strategy will provide a framework for longer-term investment decisions.

A recent survey carried out by the Department of the Environment and Local Government indicates that potential housing land supply in the Greater Dublin Area (Dublin City and county, Kildare, Meath and Wicklow) could increase to over 158,000 housing units over six years due to rezonings and increased density, compared to an Autumn 1998 estimate of 146,000 units, an increase of 8%. The progress in the other major urban centres is also positive.

#### **6.3.2 Social and affordable housing**

The balance of the anticipated housing requirements will be met by the social and affordable housing investment programme. The objectives of this Priority are:

- to increase social and affordable housing output to meet rising need
- to enhance the role of the voluntary sector in meeting social housing need
- to facilitate access to affordable housing by lower income households
- to improve the physical condition of the social housing stock and of certain categories of private housing stock
- to provide accommodation for groups with special needs.

The Priority will comprise five measures:

- Local Authority Housing

- Voluntary Housing Support Scheme
- Improving access to affordable housing for lower income households
- Housing Stock Improvement
- Accommodation for groups with special needs.

### 6.3.3 Overview

The total planned investment under this Priority over the period 2000-2006 is €9.1 billion (£7.2 billion). An overview of total planned investment over the period 2000-2006 is shown in Table 6.5.

**Table 6.5**  
**Housing Priority 2000-2006**  
**Investment (€ million)**

Priority	Total Investment	Co-Financed			Non-Co-financed	Cohesion Fund
		Total	ERDF	National		
Local Authority Housing	4,152	0	0	0	4,152	0
Voluntary Housing	1,860	0	0	0	1,860	0
Affordable Housing	1,613	0	0	0	1,613	0
Improvements to Existing Housing	1,124	0	0	0	1,124	0
Accom. for Groups with Special Needs	359	0	0	0	359	0
<b>Total</b>	<b>9,108</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,108</b>	<b>0</b>

The Local Authority Housing Measure and the Measure to improve access to affordable housing for lower income households have been classified as redistribution type interventions. Increasing the supply of more affordable housing and local authority housing will accommodate the housing needs of those who for financial reasons are unable to purchase homes at the current market prices. The other measures have also been classified as redistribution type interventions, since they